#902731237 ID 880680994
HD 243 .C2 D4747 2014 v.1

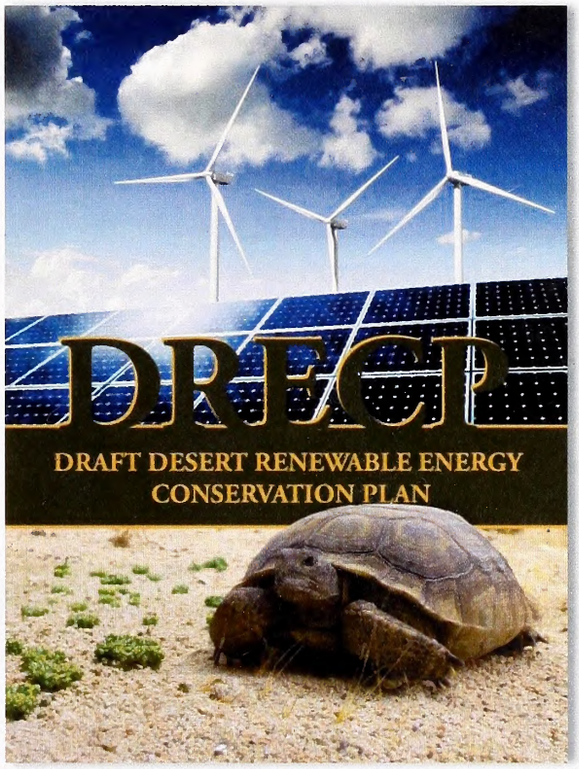
DRAFT

Desert Renewable Energy Conservation Plan (DRECP) and Environmental Impact Report/Environmental Impact Statement

SCH No. 2011071092

BLM/CA/PL-2014/025+1793

FWS–R8–ES–2014–N165



Prepared by:

California Energy Commission

California Department of Fish and Wildlife

U.S. Bureau of Land Management

U.S. Fish and Wildlife Service

SEPTEMBER 2014

Printed on 30% post-consumer recycled material.

TABLE OF CONTENTS – ALL VOLUMES

Section **Page No.**

VOLUME I: BACKGROUND AND PLANNING PROCESS

I.0 INTRODUCTION I.0-1
I.0.1 Document Organization I.0-1
I.0.2 Requirement for Further Analysis I.0-7
I.0.3 Project Background and Overview I.0-7
I.0.3.1 Plan Area I.0-15

I.1 OBJECTIVES/PURPOSE AND NEED I.1-1
I.1.1 Interagency Objectives/Purpose and Need I.1-1
I.1.2 Bureau of Land Management Purpose and Need I.1-1
I.1.2.1 Bureau of Land Management Roles and Responsibilities I.1-3
I.1.2.2 Bureau of Land Management Decisions to Be Made I.1-5
I.1.3 U.S. Fish and Wildlife Service Purpose and Need I.1-6
I.1.3.1 U.S. Fish and Wildlife Service Roles and Responsibilities I.1-7
I.1.3.2 U.S. Fish and Wildlife Service Decisions to Be Made I.1-8
I.1.4 State Objectives I.1-9
I.1.4.1 California Energy Commission I.1-10
I.1.4.2 California Department of Fish and Wildlife I.1-11
I.1.4.3 California State Lands Commission I.1-13

I.2 LEGAL FRAMEWORK I.2-1
I.2.1 Bureau of Land Management I.2-1
I.2.1.1 Federal Land Policy and Management Act I.2-1
I.2.1.2 National Environmental Policy Act I.2-5
I.2.1.3 Federal Endangered Species Act of 1973 ..... I.2-5
I.2.1.4 National Historic Preservation Act of 1966 ..... I.2-7
I.2.1.5 Omnibus Public Land Management Act of 2009 ..... I.2-8
I.2.1.6 Other Relevant Federal Authorities I.2-8
I.2.1.7 Renewable Energy Laws and Other Relevant Policies I.2-15
I.2.2 U.S. Fish and Wildlife Service I.2-20
I.2.2.1 Federal Endangered Species Act I.2-20
I.2.2.2 National Environmental Policy Act I.2-23
I.2.2.3 Migratory Bird Treaty Act I.2-24
I.2.2.4 Bald and Golden Eagle Protection Act of 1940, as Amended I.2-24
I.2.2.5 National Historic Preservation Act I.2-26
I.2.3 California Energy Commission I.2-26

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

I.2.3.1 California Environmental Quality Act I.2-26
I.2.3.2 Warren-Alquist Act I.2-27
I.2.4 California Department of Fish and Wildlife I.2-28
I.2.4.1 California Endangered Species Act I.2-28
I.2.4.2 Natural Community Conservation Planning Act I.2-29
I.2.4.3 Lake and Streambed Alteration Agreement I.2-32
I.2.4.4 Other Wildlife Protection Regulations and Statutes I.2-32
I.2.5 California State Lands Commission I.2-34
I.2.5.1 School Land Bank Act of 1984 ..... I.2-34
I.2.5.2 Sovereign Land Jurisdiction I.2-34
I.2.5.3 State Mineral Resources I.2-35
I.2.5.4 Geothermal Resource Jurisdiction I.2-35

I.3 PLANNING PROCESS I.3-1
I.3.1 Bureau of Land Management Land Use Planning Process I.3-1
I.3.1.1 Planning Criteria I.3-1
I.3.1.2 Types of Land Use Plan Decisions I.3-3
I.3.1.3 Site-Specific Implementation Decisions and Requirements for Further Environmental Analysis I.3-4
I.3.1.4 Integration with the Conservation Planning Process I.3-4
I.3.2 Natural Community Conservation Plan Planning Process I.3-5
I.3.2.1 Approach to the NCCP Conceptual Plan-Wide Reserve Design I.3-5
I.3.2.2 Approach to the DRECP NCCP Reserve Design I.3-9
I.3.3 General Conservation Plan Planning Process I.3-9
I.3.4 DRECP Biological Conservation Planning Process I.3-10
I.3.4.1 Establish the Biological Conservation Focus I.3-11
I.3.4.2 Gather Baseline Biological Information I.3-17
I.3.4.3 Identify Biological Goals and Objectives I.3-18
I.3.4.4 Develop Reserve Design I.3-21
I.3.4.5 Develop Conservation and Management Actions I.3-29
I.3.4.6 Develop Monitoring and Adaptive Management Program I.3-30
I.3.5 Renewable Energy Goals and Planning Process I.3-30
I.3.5.1 Federal/BLM Renewable Energy Goals I.3-30
I.3.5.2 California's Renewable Energy Requirements and Energy Goals I.3-33

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

I.3.5.3 Overview of the Renewable Energy Planning Process and Development Focus Area Design Process I.3-36
I.3.5.4 Estimating the Quantity of Renewable Energy Generation Within the Plan Area I.3-43
I.3.5.5 Renewable Energy Resource Distribution and Development Potential I.3-53
I.3.5.6 Identification of Development Focus Areas I.3-55
I.3.5.7 Transmission Planning Goals and Assumptions I.3-58
I.3.6 Plan Integration I.3-61
I.3.6.1 BLM Land Use Planning Designations I.3-61
I.3.6.2 Biological Conservation Planning I.3-62
I.3.6.3 Renewable Energy Planning Areas I.3-62
I.3.7 Duration of the DRECP I.3-64
I.3.7.1 Bureau of Land Management Land Use Plan Amendment I.3-64
I.3.7.2 Endangered Species Act Incidental Take Permit Duration I.3-64
I.3.7.3 Natural Community Conservation Plan Duration I.3-64

I.4 LITERATURE CITED – VOLUME I I.4-1
Chapter I.0 Introduction I.4-1
Chapter I.1 Objectives/Purpose and Need I.4-1
Chapter I.2 Legal Framework I.4-3
Chapter I.3 Planning Process I.4-7

VOLUME II: DESCRIPTION OF ALTERNATIVES

II.1 APPROACH TO DEVELOPING ALTERNATIVES II.1-1
II.1.1 Alternatives Carried Forward for Detailed Analysis II.1-1
II.1.2 Alternatives Not Carried Forward for Detailed Analysis II.1-5

II.2 NO ACTION ALTERNATIVE II.2-1
II.2.1 Plan-Wide Description of the No Action Alternative II.2-1
II.2.1.1 Overview of the No Action Alternative II.2-1
II.2.1.2 Conservation Under the No Action Alternative II.2-4
II.2.1.3 Renewable Energy and Transmission Development Under the No Action Alternative II.2-9
II.2.2 Existing BLM Land Use Plan Elements of the No Action Alternative II.2-25
II.2.2.1 BLM Renewable Energy Policies II.2-25
II.2.2.2 BLM Conservation Areas II.2-31

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

II.2.2.3 BLM-Specific Management II.2-41
II.2.3 Natural Community Conservation Plan Elements of the No Action Alternative II.2-106
II.2.4 General Conservation Plan Elements of the No Action Alternative II.2-106

II.3 PREFERRED ALTERNATIVE II.3-1
II.3.1 Plan-Wide Description of the Preferred Alternative II.3-1
II.3.1.1 Overview of the Preferred Alternative II.3-1
II.3.1.2 Conservation Strategy II.3-10
II.3.1.3 Monitoring and Adaptive Management Program II.3-89
II.3.1.4 Overview Description of Covered Activities II.3-161
II.3.1.5 Plan Implementation II.3-205
II.3.1.6 Obtaining Federal ESA and NCCPA Take Authorizations for Covered Activities II.3-247
II.3.1.7 Regulatory Assurances Under the NCCP and the GCP II.3-264
II.3.1.8 Cost and Funding II.3-280
II.3.2 BLM LUPA Elements of the Preferred Alternative II.3-298
II.3.2.1 BLM Renewable Energy Policies II.3-303
II.3.2.2 BLM Conservation Areas II.3-313
II.3.2.3 BLM-Specific Conservation and Management Actions II.3-367
II.3.2.4 CDCA Plan Amendments II.3-424
II.3.3 NCCP Elements of the Preferred Alternative II.3-437
II.3.4 GCP Elements of the Preferred Alternative II.3-444
II.3.4.1 Overview of the Non-Federal GCP Lands of the Preferred Alternative II.3-444
II.3.4.2 Overview of the GCP Permitting Process II.3-445

II.4 ALTERNATIVE 1 ..... II.4-1
II.4.1 Plan-Wide Description of Alternative 1 ..... II.4-1
II.4.1.1 Overview of Alternative 1 ..... II.4-1
II.4.1.2 Conservation Strategy II.4-3
II.4.1.3 Monitoring and Adaptive Management Program II.4-14
II.4.1.4 Overview Description of Covered Activities II.4-14
II.4.1.5 Plan Implementation II.4-29
II.4.2 BLM LUPA Elements of Alternative 1 ..... II.4-29
II.4.2.1 BLM Renewable Energy Policies II.4-33
II.4.2.2 BLM Conservation Areas II.4-33
II.4.2.3 BLM-Specific CMAs II.4-52

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

II.4.2.4 California Desert Conservation Area Plan Amendments... II.4-54
II.4.3 NCCP Elements of Alternative 1 ... II.4-54
II.4.4 GCP Elements of Alternative 1 ... II.4-55
II.4.4.1 Overview of the Nonfederal GCP Lands of Alternative 1 ... II.4-56
II.4.4.2 Overview of the GCP Permitting Process ... II.4-56

II.5 ALTERNATIVE 2 ... II.5-1
II.5.1 Plan-Wide Description of Alternative 2 ... II.5-1
II.5.1.1 Overview of Alternative 2 ... II.5-1
II.5.1.2 Conservation Strategy ... II.5-3
II.5.1.3 Monitoring and Adaptive Management Program ... II.5-18
II.5.1.4 Overview Description of Covered Activities ... II.5-18
II.5.1.5 Plan Implementation ... II.5-34
II.5.2 BLM LUPA Elements of Alternative 2 ... II.5-34
II.5.2.1 BLM Renewable Energy Policies ... II.5-36
II.5.2.2 BLM Conservation Areas ... II.5-36
II.5.2.3 BLM-Specific CMAs ... II.5-58
II.5.2.4 CDCA Plan Amendments ... II.5-62
II.5.3 NCCP Elements of Alternative 2 ... II.5-62
II.5.4 GCP Elements of Alternative 2 ... II.5-63
II.5.4.1 Overview of the Nonfederal GCP Lands of Alternative 2 ... II.5-63
II.5.4.2 Overview of the GCP Permitting Process ... II.5-64

II.6 ALTERNATIVE 3 ... II.6-1
II.6.1 Plan-Wide Description of Alternative 3 ... II.6-1
II.6.1.1 Overview of Alternative 3 ... II.6-1
II.6.1.2 Conservation Strategy ... II.6-4
II.6.1.3 Monitoring and Adaptive Management Program ... II.6-14
II.6.1.4 Overview Description of Covered Activities ... II.6-14
II.6.1.5 Plan Implementation ... II.6-29
II.6.2 BLM LUPA Elements of Alternative 3 ... II.6-29
II.6.2.1 BLM Renewable Energy Policies ... II.6-33
II.6.2.2 BLM Conservation Areas ... II.6-33
II.6.2.3 BLM-Specific CMAs ... II.6-49
II.6.2.4 CDCA Plan Amendments ... II.6-53
II.6.3 NCCP Elements of Alternative 3 ... II.6-53
II.6.4 GCP Elements of Alternative 3 ... II.6-59

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

II.6.4.1 Overview of the Nonfederal GCP Lands of Alternative 3 ..... II.6-59
II.6.4.2 Overview of the GCP Permitting Process II.6-60

II.7 ALTERNATIVE 4 ..... II.7-1
II.7.1 Interagency Description of Alternative 4 ..... II.7-1
II.7.1.1 Overview of Alternative 4 ..... II.7-1
II.7.1.2 Conservation Strategy II.7-4
II.7.1.3 Monitoring and Adaptive Management Program II.7-14
II.7.1.4 Overview Description of Covered Activities II.7-14
II.7.1.5 Plan Implementation II.7-29
II.7.2 BLM LUPA Elements of Alternative 4 ..... II.7-29
II.7.2.1 BLM Renewable Energy Policies II.7-33
II.7.2.2 BLM Conservation Areas II.7-33
II.7.2.3 BLM-Specific CMAs II.7-50
II.7.2.4 CDCA Plan Amendments II.7-52
II.7.3 NCCP Elements of Alternative 4 ..... II.7-52
II.7.4 GCP Elements of Alternative 4 ..... II.7-55
II.7.4.1 Overview of the Nonfederal GCP Lands of Alternative 4 ... II.7-56
II.7.4.2 Overview of the GCP Permitting Process II.7-56

II.8 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD II.8-1
II.8.1 Context for Alternatives Considered but Not Carried Forward for Detailed Analysis II.8-4
II.8.1.1 NEPA Requirements for Alternatives II.8-5
II.8.1.2 CEQA Requirements for Alternatives II.8-5
II.8.2 Description and Rationale for Alternatives Considered but Not Carried Forward for Detailed Analysis II.8-6
II.8.2.1 Distributed Generation Alternative II.8-6
II.8.2.2 CEERT and LSA Proposed Solar Areas Alternative II.8-10
II.8.2.3 CalWEA Proposed Wind Areas Alternative II.8-14
II.8.2.4 BLM-Only Lands Alternative II.8-17
II.8.2.5 Private and Previously Disturbed Lands Alternative II.8-20
II.8.2.6 Dispersed Development Alternative II.8-22
II.8.2.7 Southeast Emphasis Alternative II.8-24
II.8.2.8 Avian Avoidance Alternative II.8-30

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

II.9 LITERATURE CITED – VOLUME II II.9-1
Chapter II.1 Approach to Developing Alternatives II.9-1
Chapter II.2 No Action Alternative II.9-1
Chapter II.3 Preferred Alternative II.9-3
Chapter II.4 Alternative 1 ..... II.9-12
Chapter II.5 Alternative 2 ..... II.9-13
Chapter II.6 Alternative 3 ..... II.9-13
Chapter II.7 Alternative 4 ..... II.9-13
Chapter II.8 Alternatives Considered but Not Carried Forward II.9-14

VOLUME III: ENVIRONMENTAL SETTING/AFFECTED ENVIRONMENT

III.1 ENVIRONMENTAL SETTING/AFFECTED ENVIRONMENT III.1-1
III.1.1 Overview of the Plan Area III.1-1
III.1.2 Ecoregion Subareas Within the Plan Area III.1-5
III.1.3 Definition of Environmental Baseline III.1-5
III.1.3.1 CEQA Environmental Setting III.1-5
III.1.3.2 NEPA Affected Environment III.1-6
III.1.3.3 Environmental Baseline Used in This Document III.1-6
III.1.4 Baseline Outside the Plan Area III.1-13
III.1.5 Organization of the Environmental Baseline Chapters III.1-13

III.2 AIR QUALITY III.2-1
III.2.1 Regulatory Setting III.2-1
III.2.1.1 Federal III.2-1
III.2.1.2 State III.2-13
III.2.1.3 Toxic Air Contaminants III.2-13
III.2.1.4 State Implementation Plan III.2-16
III.2.1.5 California Environmental Quality Act III.2-19
III.2.1.6 Local III.2-19
III.2.2 Geographic Setting III.2-23
III.2.3 Air Quality Baseline Analysis for the Plan Area III.2-23
III.2.3.1 Ozone III.2-23
III.2.3.2 PM10 ..... III.2-24
III.2.3.3 PM2.5 ..... III.2-24
III.2.3.4 Nitrogen Dioxide III.2-24
III.2.3.5 Sulfur Dioxide III.2-25

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.2.3.6 Carbon Monoxide III.2-25
III.2.3.7 Lead III.2-25
III.2.4 Air Quality within the Plan Area III.2-25
III.2.4.1 Air Quality – Federal Standards III.2-25
III.2.4.2 Air Quality – State Standards III.2-38
III.2.5 Air Quality within the DRECP Ecoregion Subareas III.2-46
III.2.5.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.2-46
III.2.5.2 Imperial Borrego Valley Ecoregion Subarea III.2-55
III.2.5.3 Kingston and Funeral Mountains Ecoregion Subarea III.2-55
III.2.5.4 Mojave and Silurian Valley Ecoregion Subarea III.2-56
III.2.5.5 Owens River Valley Ecoregion Subarea III.2-56
III.2.5.6 Panamint Death Valley Ecoregion Subarea III.2-57
III.2.5.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.2-57
III.2.5.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.2-58
III.2.5.9 Providence and Bullion Mountains Ecoregion Subarea III.2-59
III.2.5.10 West Mojave and Eastern Slopes Ecoregion Subarea III.2-59
III.2.6 Affected Environment for the Natural Community Conservation Plan III.2-60
III.2.7 Affected Environment for the General Conservation Plan III.2-60
III.2.8 Baseline Emissions for the Plan Area III.2-60
III.2.9 Air Quality Outside of Plan Area III.2-60
III.2.9.1 Transmission III.2-60
III.2.9.2 Bureau of Land Management Land Use Plan Amendment Decisions III.2-62

III.3 METEOROLOGY AND CLIMATE CHANGE III.3-1
III.3.1 Regulatory Setting III.3-4
III.3.1.1 Federal III.3-4
III.3.1.2 State III.3-5
III.3.2 Climate Change Trends for the State and Plan Area III.3-6
III.3.2.1 Understanding Climate Change III.3-6

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.3.2.2 Statewide Greenhouse Gas Inventory III.3-8
III.3.2.3 Climate Change Trends for the State III.3-8
III.3.2.4 Climate Change Trends for the Plan Area III.3-9
III.3.3 Meteorology and Climate—Greenhouse Gas Baseline Analysis for the Plan Area III.3-10
III.3.3.1 GHG Emissions from Existing Renewable Energy Projects III.3-11
III.3.3.2 Net GHG Emissions from Existing Renewable Energy Projects III.3-12
III.3.4 Meteorology and Climate—Greenhouse Gas Baseline for Outside the Plan Area III.3-12
III.3.4.1 Transmission Outside the Plan Area III.3-12
III.3.4.2 Bureau of Land Management Land Use Plan Amendment Decisions Outside the Plan Area III.3-12

III.4 GEOLOGY AND SOILS III.4-1
III.4.1 Regulatory Setting III.4-1
III.4.1.1 Federal III.4-1
III.4.1.2 State III.4-1
III.4.1.3 County Plans III.4-2
III.4.2 Geology and Soils within the Plan Area III.4-4
III.4.2.1 Geomorphology and Surficial Geology III.4-4
III.4.2.2 Soils III.4-17
III.4.3 Faulting and Seismicity III.4-22
III.4.4 Other Geologic Hazards III.4-46
III.4.4.1 Ground Shaking III.4-46
III.4.4.2 Liquefaction III.4-47
III.4.4.3 Subsidence III.4-48
III.4.4.4 Volcanic Activity III.4-48
III.4.5 Geology and Soils in Bureau of Land Management Land Use Plan Amendment III.4-48
III.4.6 Geology and Soils in Natural Community Conservation Plan Area III.4-49
III.4.7 Geology and Soils in General Conservation Plan Area III.4-49
III.4.8 Geology and Soils Outside the Plan Area III.4-49
III.4.8.1 Transmission Out-of-Plan Area III.4-49

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.4.8.2 Bureau of Land Management Land Use Plan Amendment Decisions Outside Plan Area III.4-57

III.5 FLOOD HAZARD, HYDROLOGY, AND DRAINAGE III.5-1
III.5.1 Regulatory Setting III.5-1
III.5.1.1 Federal III.5-1
III.5.1.2 State III.5-6
III.5.1.3 Local III.5-8
III.5.2 Flood Hazard, Hydrology, and Drainage Within the Plan Area III.5-8
III.5.2.1 FEMA Flood Hazards III.5-14
III.5.2.2 Water Quality in the Plan Area III.5-14
III.5.3 Wild and Scenic Rivers Within the Plan Area III.5-17
III.5.4 Hydrologic Regions, Basins and Sub-Basins Within the Plan Area III.5-17
III.5.4.1 Characterization of Perennial, Intermittent, and Ephemeral Streams III.5-17
III.5.4.2 Streamflows for Perennial, Intermittent, and Ephemeral Streams III.5-19
III.5.5 Protecting the Water Quality and Beneficial Uses of Plan Area Waters III.5-24
III.5.5.1 Beneficial Uses III.5-24
III.5.5.2 Water Quality Objectives and Effluent Limitations III.5-27
III.5.6 Flood Hazard, Hydrology, and Drainage Areas Within Plan Area by Ecoregion Subarea III.5-28
III.5.6.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.5-28
III.5.6.2 Imperial Borrego Valley Ecoregion Subarea III.5-29
III.5.6.3 Kingston and Funeral Mountains Ecoregion Subarea III.5-29
III.5.6.4 Mojave and Silurian Valley Ecoregion Subarea III.5-29
III.5.6.5 Owens River Valley Ecoregion Subarea III.5-29
III.5.6.6 Panamint Death Valley Ecoregion Subarea III.5-29
III.5.6.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.5-30
III.5.6.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.5-30

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.5.6.9 Providence and Bullion Mountains Ecoregion Subarea III.5-30
III.5.6.10 West Mojave and Eastern Slopes Ecoregion Subarea III.5-30
III.5.7 BLM LUPA Plan Area III.5-30
III.5.8 NCCP Plan Area III.5-31
III.5.9 General Conservation Plan (GCP) III.5-31
III.5.9.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.5-31
III.5.9.2 Imperial Borrego Valley Ecoregion Subarea III.5-31
III.5.9.3 Kingston and Funeral Mountains Ecoregion Subarea III.5-31
III.5.9.4 Mojave and Silurian Valley Ecoregion Subarea III.5-32
III.5.9.5 Owens River Valley Ecoregion Subarea III.5-32
III.5.9.6 Panamint Death Valley Ecoregion Subarea III.5-32
III.5.9.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.5-32
III.5.9.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.5-32
III.5.9.9 Providence and Bullion Mountains Ecoregion Subarea III.5-33
III.5.9.10 West Mojave and Eastern Slopes Ecoregion Subarea III.5-33
III.5.10 Flood Hazard, Hydrology, and Drainage Outside of the Plan Area III.5-33
III.5.10.1 Flood Hazard, Hydrology, and Drainage – Transmission Outside of Plan Area III.5-33
III.5.10.2 BLM LUPA III.5-35

III.6 GROUNDWATER, WATER SUPPLY, AND WATER QUALITY III.6-1
III.6.1 Regulatory Setting III.6-1
III.6.1.1 Federal III.6-1
III.6.1.2 State III.6-4
III.6.1.3 Local III.6-5
III.6.2 Groundwater Resources within the Plan Area III.6-6
III.6.2.1 Adjudicated Basins III.6-7
III.6.2.2 Sole-Source Aquifers III.6-25
III.6.2.3 Basins Tributary to the Colorado River III.6-25

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.6.3 Hydrogeological and Water Quality Framework III.6-26
III.6.3.1 Aquifer Characteristics III.6-26
III.6.3.2 Groundwater Basin Boundaries III.6-30
III.6.3.3 Water Inflows and Outflows III.6-35
III.6.3.4 Subsidence III.6-57
III.6.3.5 Water Quality III.6-63
III.6.3.6 Imperial Borrego Valley Ecoregion Subarea III.6-68
III.6.3.7 Kingston and Funeral Mountains Ecoregion Subarea III.6-70
III.6.3.8 Mojave and Silurian Valley Ecoregion Subarea III.6-73
III.6.3.9 Owens River Valley Ecoregion Subarea III.6-76
III.6.3.10 Panamint Death Valley Ecoregion Subarea III.6-78
III.6.3.11 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.6-80
III.6.3.12 Piute Valley and Sacramento Mountains Ecoregion Subarea III.6-84
III.6.3.13 Providence and Bullion Mountains Ecoregion Subarea III.6-86
III.6.3.14 West Mojave and Eastern Slopes Ecoregion Subarea III.6-88
III.6.4 Bureau of Land Management Land Use Plan Amendment III.6-91
III.6.5 Natural Community Conservation Planning Existing Conditions III.6-94
III.6.6 General Conservation Land Plan Affected Environment III.6-98
III.6.7 Groundwater, Water Supply, and Water Quality Outside of Plan Area III.6-101
III.6.7.1 Transmission Out of Plan Area III.6-101
III.6.7.2 BLM LUPA Outside of Plan Area III.6-107

III.7 BIOLOGICAL RESOURCES III.7-1
III.7.1 Regulatory Setting III.7-1
III.7.1.1 Federal III.7-1
III.7.1.2 State III.7-5
III.7.2 Physical Conditions III.7-8
III.7.2.1 Ecoregions III.7-8
III.7.2.2 Climate III.7-8
III.7.2.3 Geomorphology III.7-9
III.7.2.4 Hydrology III.7-10

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.7.2.5 Topography III.7-17
III.7.2.6 Surficial Geology and Processes III.7-17
III.7.3 Ecological Processes III.7-21
III.7.3.1 Environmental Gradients III.7-21
III.7.3.2 Substrates III.7-24
III.7.3.3 Soil Biota III.7-26
III.7.3.4 Carbon and Nutrient Cycling III.7-27
III.7.3.5 Fire III.7-28
III.7.4 Ecological Context of the Plan Area III.7-30
III.7.4.1 Flora, Natural Communities, and Other Land Covers III.7-34
III.7.4.2 Natural Communities and Land Covers III.7-65
III.7.4.3 Natural Communities and Other Land Covers by Ecoregion Subarea III.7-72
III.7.5 Wildlife Resources within the Plan Area III.7-95
III.7.5.1 Invertebrates III.7-96
III.7.5.2 Reptiles and Amphibians III.7-97
III.7.5.3 Birds III.7-100
III.7.5.4 Fish III.7-117
III.7.5.5 Mammals III.7-119
III.7.6 Special-Status Species III.7-123
III.7.6.1 Covered and Planning Species III.7-124
III.7.6.2 Covered and Planning Species Modeled Habitat III.7-183
III.7.6.3 Other Bureau of Land Management Sensitive Species Addressed in the Land Use Plan Amendment III.7-197
III.7.6.4 Special-Status Species Not Covered Under the Desert Renewable Energy Conservation Plan III.7-197
III.7.7 Invasive Species III.7-242
III.7.7.1 Invasive Plant Species III.7-242
III.7.7.2 Invasive Wildlife Species III.7-243
III.7.8 Landscape Habitat Linkages and Wildlife Movement Corridors III.7-245
III.7.9 Bureau of Land Management Land Use Plan Amendment III.7-272
III.7.9.1 Bureau of Land Management Land Use Plan Amendment Affected Environment for Special-Status Species Not Covered under the DRECP III.7-285
III.7.10 Natural Community Conservation Plan III.7-287

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.7.10.1 Natural Community Conservation Plan Affected Environment for Special-Status Species Not Covered under the DRECP....III.7-287
III.7.11 General Conservation Plan....III.7-287
III.7.11.1 General Conservation Plan Affected Environment for Special-Status Species Not Covered under the DRECP...III.7-301
III.7.12 Biological Resources Outside the Plan Area....III.7-303
III.7.12.1 Transmission....III.7-303
III.7.12.2 Bureau of Land Management Land Use Plan Amendment....III.7-318

III.8 CULTURAL RESOURCES....III.8-1
III.8.1 Regulatory Setting....III.8-2
III.8.1.1 Federal....III.8-2
III.8.1.2 State....III.8-11
III.8.1.3 Local....III.8-16
III.8.2 Cultural Resources Background and Context....III.8-18
III.8.2.1 Resource Types and Definitions....III.8-19
III.8.2.2 Prehistory....III.8-23
III.8.2.3 Ethnographic Context....III.8-36
III.8.2.4 Historic Period....III.8-57
III.8.3 Known Cultural Resources in the Plan Area by Ecoregion Subarea....III.8-68
III.8.3.1 CDCA Surveys and ACECs....III.8-69
III.8.3.2 Surveys Unrelated to the CDCA Planning Phase....III.8-75
III.8.3.3 BLM Cultural Resources Geodatabase....III.8-75
III.8.3.4 Results of Cultural Resources Analysis....III.8-79
III.8.4 Bureau of Land Management Land Use Plan Amendment....III.8-83
III.8.5 Natural Community Conservation Plan Existing Conditions....III.8-83
III.8.6 General Conservation Plan Affected Environment....III.8-83
III.8.7 Cultural Resources Outside of Plan Area....III.8-84
III.8.7.1 Transmission Outside of Plan Area....III.8-84
III.8.7.2 Bureau of Land Management Land Use Plan Amendment Outside of Plan Area....III.8-100

III.9 NATIVE AMERICAN INTERESTS....III.9-1
III.9.1 Regulatory Environment....III.9-1
III.9.1.1 Federal....III.9-2

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.9.1.2 State III.9-9
III.9.1.3 Local III.9-11
III.9.2 Tribes with Interests in the Plan Area III.9-12
III.9.3 Native American Meetings III.9-16
III.9.3.1 Previous Dialogues Related to Renewable Energy Development III.9-16
III.9.3.2 Consultation for DRECP III.9-17
III.9.4 Native American Concerns III.9-19
III.9.4.1 Process Concerns III.9-20
III.9.4.2 Physical World Concerns III.9-21

III.10 PALEONTOLOGICAL RESOURCES III.10-1
III.10.1 Regulatory Setting III.10-2
III.10.1.1 Federal III.10-3
III.10.1.2 State III.10-6
III.10.1.3 Bureau of Land Management Plans and Guidelines III.10-7
III.10.2 Baseline Inventory and Mapping Methodology III.10-10
III.10.3 Overview of Paleontological Resources Within the Plan Area III.10-17
III.10.3.1 Summary of Paleontological Resources Known in the Plan Area III.10-18
III.10.3.2 Overview of Generalized PFYC Results III.10-20
III.10.4 Paleontological Resources Plan-Wide by Ecoregion Subarea III.10-21
III.10.4.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.10-21
III.10.4.2 Imperial Borrego Valley Ecoregion Subarea III.10-24
III.10.4.3 Kingston and Funeral Mountains Ecoregion Subarea III.10-25
III.10.4.4 Mojave and Silurian Valley Ecoregion Subarea III.10-26
III.10.4.5 Owens River Valley Ecoregion Subarea III.10-28
III.10.4.6 Panamint Death Valley Ecoregion Subarea III.10-28
III.10.4.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.10-29
III.10.4.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.10-30
III.10.4.9 Providence and Bullion Mountains Ecoregion Subarea III.10-30
III.10.4.10 West Mojave and Eastern Slopes Ecoregion Subarea III.10-31

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.10.5 Paleontological Resources—Environment Outside the Plan Area III.10-32
III.10.5.1 Paleontological Resources—Transmission Out of Plan Area III.10-32
III.10.5.2 BLM Land Use Plan Amendment Decisions III.10-33

III.11 LAND USE AND POLICIES III.11-1
III.11.1 Regulatory Setting III.11-1
III.11.1.1 Federal III.11-2
III.11.1.2 State III.11-2
III.11.1.3 Local III.11-3
III.11.2 Existing Land Management and Uses in the Plan Area III.11-3
III.11.2.1 Federal Lands III.11-4
III.11.2.2 State Lands III.11-8
III.11.2.3 County Lands III.11-10
III.11.3 Existing Planning Documents III.11-13
III.11.3.1 Federal Planning Documents III.11-13
III.11.3.2 State of California III.11-15
III.11.3.3 Regional and County Planning Documents III.11-18
III.11.4 Land Ownership and Use Plan-Wide by Ecoregion Subarea III.11-24
III.11.4.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.11-25
III.11.4.2 Imperial Borrego Valley Ecoregion Subarea III.11-26
III.11.4.3 Kingston and Funeral Mountains Ecoregion Subarea III.11-27
III.11.4.4 Mojave and Silurian Valley Ecoregion Subarea III.11-28
III.11.4.5 Owens River Valley Ecoregion Subarea III.11-29
III.11.4.6 Panamint Death Valley Ecoregion Subarea III.11-30
III.11.4.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.11-30
III.11.4.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.11-31
III.11.4.9 Providence and Bullion Mountains Ecoregion Subarea III.11-32
III.11.4.10 West Mojave and Eastern Slopes Ecoregion Subarea III.11-33

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.11.5 Land Ownership and Use—Bureau of Land Management Land Use Plan Amendment III.11-34
III.11.6 Affected Environment for the Natural Communities Conservation Plan III.11-35
III.11.7 Affected Environment for the General Conservation Plan III.11-35
III.11.8 Land Ownership and Use, Environment Outside of Plan Area III.11-35
III.11.8.1 Land Uses and Policies—Transmission Out of Plan Area III.11-35
III.11.8.2 BLM Land Use Plan Amendment Decisions III.11-41

III.12 AGRICULTURAL LAND AND PRODUCTION III.12-1
III.12.1 Regulatory Setting III.12-1
III.12.1.1 Federal III.12-1
III.12.1.2 State III.12-1
III.12.1.3 Applicable Local Agricultural Lands Ordinances III.12-7
III.12.2 Agricultural Land within the Plan Area by Ecoregion Subarea III.12-17
III.12.2.1 Williamson Act Lands III.12-17
III.12.2.2 Important Farmland III.12-19
III.12.2.3 Agricultural Land by DRECP Ecoregion Subarea III.12-19
III.12.3 Agricultural Resources—Natural Community Conservation Plan Existing Conditions III.12-29
III.12.4 Agricultural Resources—General Conservation Plan III.12-30
III.12.5 Agricultural Resources—Outside the Plan Area III.12-31
III.12.5.1 Transmission Outside of Plan Area III.12-31
III.12.5.2 Bureau of Land Management Land Use Plan Amendment Decisions III.12-31

III.13 BLM LANDS AND REALTY—LAND USE AUTHORIZATIONS AND LAND TENURE III.13-1
III.13.1 Regulatory Setting III.13-2
III.13.1.1 Federal III.13-2
III.13.2 Affected Environment III.13-7
III.13.2.1 Rights-of-Way for Wind and Solar Energy Development III.13-8
III.13.2.2 Land Use Authorizations – Corridors III.13-10
III.13.2.3 Land Use Authorizations – Exclusion Areas III.13-10
III.13.2.4 Land Use Authorizations for Nonrenewable Energy Uses III.13-10

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.13.3 Land Tenure III.13-11
III.13.4 Bureau of Land Management Renewable Energy Land Use Authorizations by Ecoregion Subarea III.13-12
III.13.4.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.13-12
III.13.4.2 Imperial Borrego Valley Ecoregion Subarea III.13-12
III.13.4.3 Kingston and Funeral Mountains Ecoregion Subarea III.13-13
III.13.4.4 Mojave and Silurian Valley Ecoregion Subarea III.13-13
III.13.4.5 Owens River Valley Ecoregion Subarea III.13-13
III.13.4.6 Panamint Death Valley Ecoregion Subarea III.13-14
III.13.4.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.13-14
III.13.4.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.13-15
III.13.4.9 Providence and Bullion Mountains Ecoregion Subarea III.13-15
III.13.4.10 West Mojave and Eastern Slopes Ecoregion Subarea III.13-15
III.13.5 Affected Environment for the Natural Community Conservation Plan III.13-17
III.13.6 Affected Environment for the General Conservation Plan III.13-17
III.13.7 Bureau of Land Management Lands and Realty – Outside the Plan Area III.13-17
III.13.7.1 Transmission III.13-17
III.13.7.2 BLM LUPA Decisions – Out of Plan Area III.13-19

III.14 BLM LAND DESIGNATIONS, CLASSIFICATIONS, ALLOCATIONS, AND LANDS WITH WILDERNESS CHARACTERISTICS III.14-1
III.14.1 Regulatory Setting III.14-2
III.14.1.1 Federal III.14-2
III.14.2 Affected Environment – Bureau of Land Management Special Designations, Classifications, Allocations, and Lands With Wilderness Characteristics III.14-14
III.14.2.1 National Conservation Lands III.14-14
III.14.2.2 Areas of Critical Environmental Concern III.14-27
III.14.2.3 Lands with Inventoried Wilderness Characteristics III.14-38

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.14.2.4 Special Recreation Management Areas III.14-40
III.14.2.5 Designated Open Off-Highway Vehicle Areas III.14-43
III.14.2.6 Multiple-Use Classes III.14-43
III.14.3 Affected Environment for the Natural Community Conservation Plan III.14-44
III.14.4 Affected Environment for the General Conservation Plan III.14-45
III.14.5 Bureau of Land Management Special Designations, Classifications, Allocations, and Lands With Wilderness Characteristics—Outside the Plan Area III.14-45
III.14.5.1 Transmission III.14-45
III.14.5.2 Bureau of Land Management Special Designations – Outside of the Plan Area III.14-49

III.15 MINERAL RESOURCES III.15-1
III.15.1 Statutory, Regulatory and Policy Setting III.15-1
III.15.1.1 Federal III.15-1
III.15.1.2 State III.15-7
III.15.1.3 County III.15-8
III.15.2 Mineral Resources Within the Plan Area III.15-10
III.15.2.1 Geothermal Resources III.15-10
III.15.2.3 High-Potential Mineral Areas III.15-15
III.15.2.4 High-Priority Mineral and Energy Locations III.15-15
III.15.2.5 Rare Earth Element Areas III.15-19
III.15.2.6 Locatable, Leasable, and Mineral Materials III.15-20
III.15.2.7 Oil and Gas Resources III.15-21
III.15.3 Mineral Resources in the Natural Community Conservation Plan Affected Environment III.15-21
III.15.4 Mineral Resources in the General Conservation Plan Affected Environment III.15-22
III.15.5 Mineral Resources Outside of Plan Area III.15-22
III.15.5.1 Transmission III.15-22
III.15.5.2 Bureau of Land Management Land Use Plan Amendment Decisions III.15-30

III.16 LIVESTOCK GRAZING III.16-1
III.16.1 Regulatory Setting III.16-1
III.16.1.1 Federal III.16-1
III.16.1.2 State III.16-6

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.16.2 Grazing Within the Plan Area III.16-6
III.16.2.1 Livestock Grazing Allotments III.16-6
III.16.2.2 Livestock Grazing – Private Lands III.16-10
III.16.3 Livestock Grazing—Natural Community Conservation Plan Existing Conditions III.16-10
III.16.4 Livestock Grazing—Habitat Conservation Plan Affected Environment III.16-10
III.16.4.1 Grazing in the General Conservation Plan Area III.16-10
III.16.5 Livestock Grazing—Outside the Plan Area III.16-17
III.16.5.1 Transmission Out of Plan Area III.16-17
III.16.5.2 Bureau of Land Management Land Use Plan Amendment Decisions III.16-18

III.17 WILD HORSES AND BURROS III.17-1
III.17.1 Regulatory Setting III.17-1
III.17.1.1 Federal III.17-1
III.17.2 Wild Horse and Burro Herd Management Areas by Ecoregion Subarea III.17-1
III.17.2.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.17-3
III.17.2.2 Imperial Borrego Valley Ecoregion Subarea III.17-4
III.17.2.3 Kingston and Funeral Mountains Ecoregion Subarea III.17-4
III.17.2.4 Mojave and Silurian Valley Ecoregion Subarea III.17-7
III.17.2.5 Owens River Valley Ecoregion Subarea III.17-7
III.17.2.6 Panamint Death Valley Ecoregion Subarea III.17-7
III.17.2.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.17-7
III.17.2.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.17-7
III.17.2.9 Providence and Bullion Mountains Ecoregion Subarea III.17-8
III.17.2.10 West Mojave and Eastern Slopes Ecoregion Subarea III.17-8
III.17.3 Affected Environment for the Natural Community Conservation Plan III.17-8
III.17.4 Affected Environment for the General Conservation Plan III.17-8

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.17.5 Wild Horse and Burro Herd Management Areas Outside the Plan Area III.17-8
III.17.5.1 Transmission Out of Plan Area III.17-8
III.17.5.2 Bureau of Land Management Land Use Plan Amendment III.17-9

III.18 OUTDOOR RECREATION III.18-1
III.18.1 Regulatory Setting III.18-1
III.18.1.1 Federal III.18-1
III.18.1.2 State III.18-6
III.18.1.3 County III.18-8
III.18.2 Outdoor Recreation Within the Plan Area III.18-9
III.18.2.1 Bureau of Land Management III.18-9
III.18.2.2 National Park Service III.18-14
III.18.2.3 State of California III.18-16
III.18.2.4 County Parks and Recreation III.18-20
III.18.3 Outdoor Recreation Plan-Wide by Ecoregion Subarea III.18-21
III.18.4 Outdoor Recreation—Natural Community Conservation Plan III.18-23
III.18.5 Outdoor Recreation—General Conservation Plan III.18-24
III.18.6 Outdoor Recreation Outside of Plan Area III.18-24
III.18.6.1 Transmission III.18-24
III.18.6.2 Bureau of Land Management Land Use Plan Amendment Decisions III.18-50

III.19 TRANSPORTATION AND PUBLIC ACCESS III.19-1
III.19.1 Regulatory Setting III.19-1
III.19.1.1 Federal III.19-1
III.19.1.2 State III.19-6
III.19.1.3 County III.19-7
III.19.2 Transportation Facilities Within the Plan Area III.19-10
III.19.2.1 Federal Highways III.19-10
III.19.2.2 State Routes III.19-11
III.19.2.3 Railroads III.19-15
III.19.2.4 Existing Built Environment and Renewable Energy Projects III.19-15
III.19.3 Transportation Plan-Wide by Ecoregion Subarea III.19-15
III.19.3.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.19-15

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.19.3.2 Imperial Borrego Valley Ecoregion Subarea III.19-16
III.19.3.3 Kingston and Funeral Mountains Ecoregion Subarea III.19-17
III.19.3.4 Mojave and Silurian Valley Ecoregion Subarea III.19-18
III.19.3.5 Owens River Valley Ecoregion Subarea III.19-19
III.19.3.6 Panamint Death Valley Ecoregion Subarea III.19-19
III.19.3.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.19-20
III.19.3.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.19-21
III.19.3.9 Providence and Bullion Mountains Ecoregion Subarea III.19-22
III.19.3.10 West Mojave and Eastern Slopes Ecoregion Subarea III.19-22
III.19.4 Affected Environment for the Natural Community Conservation Plan III.19-24
III.19.5 Affected Environment for the General Conservation Plan III.19-24
III.19.6 Transportation Outside of Plan Area III.19-24
III.19.6.1 Transmission III.19-24
III.19.6.2 Bureau of Land Management Land Use Plan Amendment Decisions III.19-28

III.20 VISUAL RESOURCES III.20-1
III.20.1 Regulatory Setting III.20-1
III.20.1.1 Federal III.20-1
III.20.1.2 State III.20-4
III.20.1.3 County III.20-6
III.20.2 Visual Resources within the Plan Area III.20-10
III.20.2.1 Bureau of Land Management Visual Resource Management and Mapping III.20-11
III.20.2.2 National Parks, Preserves, Historic Sites, Forests, and National Conservation Lands III.20-13
III.20.2.3 State Parks and Scenic Highways III.20-28
III.20.3 Summary of Visual Resources and Visually Important Management Units by Ecoregion Subarea III.20-32
III.20.3.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.20-32

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.20.3.2 Imperial and Borrego Valley Ecoregion Subarea III.20-33
III.20.3.3 Kingston and Funeral Mountains Ecoregion Subarea III.20-34
III.20.3.4 Mojave and Silurian Valley Ecoregion Subarea III.20-35
III.20.3.5 Owens River Valley Ecoregion Subarea III.20-35
III.20.3.6 Panamint Death Valley Ecoregion Subarea III.20-36
III.20.3.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.20-37
III.20.3.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.20-38
III.20.3.9 Providence and Bullion Mountains Ecoregion Subarea III.20-39
III.20.3.10 West Mojave and Eastern Slopes Ecoregion Subarea III.20-39
III.20.4 Bureau of Land Management Land Use Plan Amendment III.20-40
III.20.5 Natural Community Conservation Plan III.20-41
III.20.6 General Conservation Plan III.20-41
III.20.7 Visual Resources Outside of Plan Area III.20-42
III.20.7.1 Transmission Outside of the Plan Area III.20-42
III.20.7.2 Bureau of Land Management Land Use Plan Amendment Decisions Outside of the Plan Area III.20-47

III.21 NOISE AND VIBRATION III.21-1
III.21.1 Regulatory Setting III.21-1
III.21.1.1 Federal III.21-1
III.21.1.2 State III.21-2
III.21.1.3 Local III.21-2
III.21.2 Noise and Vibration Fundamentals III.21-10
III.21.2.1 Noise Fundamentals III.21-10
III.21.2.2 Vibration III.21-13
III.21.3 Noise and Vibration Baseline for the Plan Area III.21-14
III.21.3.1 Sensitive Receptors III.21-15
III.21.4 Sensitive Receptors by Ecoregion Subarea III.21-18
III.21.4.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.21-18
III.21.4.2 Imperial Borrego Valley Ecoregion Subarea III.21-18

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.21.4.3 Kingston and Funeral Mountains Ecoregion Subarea III.21-18
III.21.4.4 Mojave and Silurian Valley Ecoregion Subarea III.21-19
III.21.4.5 Owens River Valley Ecoregion Subarea III.21-19
III.21.4.6 Panamint Death Valley Ecoregion Subarea III.21-19
III.21.4.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.21-19
III.21.4.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.21-19
III.21.4.9 Providence and Bullion Mountains Ecoregion Subarea III.21-19
III.21.4.10 West Mojave and Eastern Slopes Ecoregion Subarea III.21-20
III.21.5 Affected Environment for the Natural Community Conservation Plan III.21-20
III.21.6 Affected Environment for the General Conservation Plan III.21-20
III.21.7 Noise and Vibration Environment Outside of Plan Area III.21-20
III.21.7.1 Transmission III.21-21
III.21.7.2 BLM Land Use Plan Amendment Decisions III.21-22

III.22 PUBLIC HEALTH, SAFETY, AND SERVICES III.22-1
III.22.1 Regulatory Setting III.22-1
III.22.1.1 Federal III.22-1
III.22.1.2 State III.22-3
III.22.2 Overview of Public Health, Safety, and Services within the Plan Area III.22-6
III.22.2.1 Hazardous Materials III.22-6
III.22.2.2 Airport Safety Hazards III.22-8
III.22.2.3 Wildland Fire Hazards III.22-13
III.22.2.4 Public Services III.22-14
III.22.2.5 Landfills III.22-24
III.22.2.6 Public Health and Safety III.22-24
III.22.3 Public Health, Safety, and Services issues within Plan Area by Ecoregion Subarea III.22-25
III.22.3.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.22-25
III.22.3.2 Imperial Borrego Valley Ecoregion Subarea III.22-25

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.22.3.3 Kingston and Funeral Mountains Ecoregion Subarea....III.22-26
III.22.3.4 Mojave and Silurian Valley Ecoregion Subarea....III.22-26
III.22.3.5 Owens River Valley Ecoregion Subarea....III.22-26
III.22.3.6 Panamint Death Valley Ecoregion Subarea....III.22-29
III.22.3.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea....III.22-29
III.22.3.8 Piute Valley and Sacramento Mountains Ecoregion Subarea....III.22-29
III.22.3.9 Providence and Bullion Mountains Ecoregion Subarea....III.22-29
III.22.3.10 West Mojave and Eastern Slopes Ecoregion Subarea....III.22-30
III.22.3.11 Hazardous Materials by Ecoregion Subarea....III.22-30
III.22.4 Public Health, Safety, and Services Issues—Natural Community Conservation Plan....III.22-31
III.22.5 Public Health, Safety, and Services Issues—General Conservation Plan....III.22-31
III.22.5.1 Public Health, Safety, and Services Issues in the General Conservation Plan Area....III.22-31
III.22.6 Public Health, Safety, and Services Issues Outside the Plan Area....III.22-33
III.22.6.1 Public Health, Safety, and Services Issues—Transmission Out of Plan Area....III.22-33
III.22.6.2 Public Health, Safety, and Services Issues—Bureau of Land Management Land Use Plan Amendment Decisions....III.22-33

III.23 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE....III.23-1
III.23.1 Regulatory Setting....III.23-1
III.23.1.1 Federal....III.23-1
III.23.1.2 State....III.23-3
III.23.1.3 Regional....III.23-4
III.23.1.4 Local....III.23-6
III.23.2 Social and Economic Conditions....III.23-7
III.23.2.1 Socioeconomic Study Areas....III.23-8
III.23.2.2 Population....III.23-10
III.23.2.3 Housing....III.23-11

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.23.2.4 Employment III.23-13
III.23.2.5 Public Finance III.23-16
III.23.3 Community and Social Organization III.23-18
III.23.3.1 Study Area III.23-18
III.23.3.2 Social Values and Community Attitudes Toward Renewable Energy Development III.23-19
III.23.4 Environmental Justice Conditions III.23-20
III.23.4.1 Defining Environmental Justice Populations III.23-20
III.23.4.2 Plan Area Minority and Low-Income Populations III.23-21
III.23.4.3 Study Area Minority and Low-Income Populations III.23-22
III.23.5 Socioeconomics and Environmental Justice by Ecoregion Subarea III.23-23
III.23.5.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.23-23
III.23.5.2 Imperial Borrego Valley Ecoregion Subarea III.23-23
III.23.5.3 Kingston and Funeral Mountains Ecoregion Subarea III.23-23
III.23.5.4 Mojave and Silurian Valley Ecoregion Subarea III.23-24
III.23.5.5 Owens River Valley Ecoregion Subarea III.23-24
III.23.5.6 Panamint Death Valley Ecoregion Subarea III.23-24
III.23.5.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.23-24
III.23.5.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.23-25
III.23.5.9 Providence and Bullion Mountains Ecoregion Subarea III.23-25
III.23.5.10 West Mojave and Eastern Slopes Ecoregion Subarea III.23-25
III.23.6 Socioeconomics and Environmental Justice—Bureau of Land Management Land Use Plan Amendment Affected Environment III.23-25
III.23.7 Socioeconomics and Environmental Justice—Natural Community Conservation Plan Environmental Setting III.23-26
III.23.8 Socioeconomics and Environmental Justice—General Conservation Plan Affected Environment III.23-26
III.23.9 Socioeconomics and Environmental Justice Outside of Plan Area III.23-26

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.23.9.1 Transmission III.23-26
III.23.9.2 San Diego Area III.23-27
III.23.9.3 Los Angeles Area III.23-27
III.23.9.4 North Palm Springs-Riverside Area III.23-27
III.23.9.5 Central Valley Area III.23-27
III.23.10 Socioeconomics and Environmental Justice—Bureau of Land Management Land Use Plan Amendment Outside of Plan Area III.23-30

III.24 DEPARTMENT OF DEFENSE LANDS AND OPERATIONS III.24-1
III.24.1 Regulatory Setting III.24-1
III.24.1.1 Federal III.24-1
III.24.2 Department of Defense Lands and Operations Within the Plan Area III.24-3
III.24.2.1 Military Bases and Operations III.24-3
III.24.2.2 Airspace Operations III.24-8
III.24.2.3 Radar Facilities III.24-13
III.24.3 Department of Defense Lands and Operations by DRECP Ecoregion Subarea III.24-13
III.24.3.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.24-13
III.24.3.2 Imperial Borrego Valley Ecoregion Subarea III.24-14
III.24.3.3 Kingston and Funeral Mountains Ecoregion Subarea III.24-17
III.24.3.4 Mojave and Silurian Valley Ecoregion Subarea III.24-17
III.24.3.5 Owens River Valley Ecoregion Subarea III.24-18
III.24.3.6 Panamint Death Valley Ecoregion Subarea III.24-18
III.24.3.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.24-18
III.24.3.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.24-19
III.24.3.9 Providence and Bullion Mountains Ecoregion Subarea III.24-19
III.24.3.10 West Mojave and Eastern Slopes Ecoregion Subarea III.24-20
III.24.4 Affected Environment for the Natural Community Conservation Plan III.24-20
III.24.5 Affected Environment for the General Conservation Plan III.24-21

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.24.6 Department of Defense Lands and Operations Outside of Plan Area III.24-21
III.24.6.1 Department of Defense Lands and Operations—Transmission Outside of Plan Area III.24-21
III.24.6.2 Bureau of Land Management Land Use Plan Amendment Decisions III.24-22

III.25 LITERATURE CITED – VOLUME III III.25-1
Chapter III.1 Environmental Setting/Affected Environment III.25-1
Chapter III.2 Air Quality III.25-1
Chapter III.3 Meteorology and Climate Change III.25-4
Chapter III.4 Geology and Soils III.25-6
Chapter III.5 Flood Hazard, Hydrology, and Drainage III.25-10
Chapter III.6 Groundwater, Water Supply, and Water Quality III.25-12
Chapter III.7 Biological Resources III.25-17
Chapter III.8 Cultural Resources III.25-37
Chapter III.9 Tribal Interests III.25-60
Chapter III.10 Paleontological Resources III.25-65
Chapter III.11 Land Uses and Policies III.25-70
Chapter III.12 Agricultural Land and Production III.25-71
Chapter III.13 BLM Lands and Realty—Rights-of-way and Land Tenure III.25-72
Chapter III.14 BLM Special Designations, Classifications, Allocations, and Lands With Wilderness Characteristics III.25-75
Chapter III.15 Mineral Resources III.25-76
Chapter III.16 Livestock Grazing III.25-80
Chapter III.17 Wild Horses and Burros III.25-81
Chapter III.18 Outdoor Recreation III.25-82
Chapter III.19 Transportation and Public Access III.25-84
Chapter III.20 Visual/Aesthetic Resources III.25-85
Chapter III.21 Noise and Vibration III.25-86
Chapter III.22 Public Safety and Services III.25-87
Chapter III.23 Socioeconomics and Environmental Justice III.25-89
Chapter III.24 Department of Defense Lands and Operations III.25-92

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

VOLUME IV: ENVIRONMENTAL CONSEQUENCES/EFFECTS ANALYSIS

IV.1 INTRODUCTION TO IMPACT ASSESSMENT IV.1-1
IV.1.1 Legal Framework for Impact Assessment IV.1-1
IV.1.1.1 California Environmental Quality Act IV.1-2
IV.1.1.2 National Environmental Policy Act IV.1-6
IV.1.1.3 CEQA/NEPA Document IV.1-7
IV.1.2 Summary of Alternatives Analyzed IV.1-8
IV.1.2.1 Overview of Alternatives Development Process IV.1-8
IV.1.2.2 Key Features of Each Alternative IV.1-16
IV.1.2.3 BLM Land Use Plan Amendment Alternatives IV.1-20
IV.1.2.4 Natural Community Conservation Plan Alternatives IV.1-21
IV.1.2.5 General Conservation Plan Alternatives IV.1-23
IV.1.3 Approach to Impact Assessment IV.1-23
IV.1.3.1 Plan Components Analyzed in Volume IV IV.1-23
IV.1.3.2 Renewable Energy and Transmission Facilities IV.1-24
IV.1.3.3 Reserve Design and Conservation and Management Actions IV.1-26
IV.1.4 Methods and Organization of Impact Analysis IV.1-26
IV.1.4.1 Impact Assessment Methodology IV.1-27
IV.1.4.2 Impact Reduction Strategies and Mitigation Measures IV.1-29
IV.1.4.3 Cumulative Impacts IV.1-29
IV.1.5 Other Required CEQA and NEPA Considerations IV.1-30
IV.1.5.1 CEQA Requirements IV.1-30
IV.1.5.2 NEPA Requirements IV.1-31
IV.1.6 Organization of Each Analysis Section IV.1-31

IV.2 AIR QUALITY IV.2-1
IV.2.1 Approach to Impact Analysis IV.2-1
IV.2.1.1 General Methods IV.2-1
IV.2.1.2 CEQA Standards of Significance IV.2-3
IV.2.2 Typical Impacts Common to All Action Alternatives IV.2-4
IV.2.2.1 Impacts of Renewable Energy and Transmission Development IV.2-5
IV.2.2.2 Impacts of the Reserve Design IV.2-6

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.2.2.3 Impacts of Bureau of Land Management (BLM) Land Use Plan Decisions IV.2-6
IV.2.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.2-7
IV.2.3 Impact Analysis by Alternative IV.2-7
IV.2.3.1 No Action Alternative IV.2-7
IV.2.3.2 Preferred Alternative IV.2-20
IV.2.3.3 Alternative 1 ..... IV.2-33
IV.2.3.4 Alternative 2 ..... IV.2-40
IV.2.3.5 Alternative 3 ..... IV.2-48
IV.2.3.6 Alternative 4 ..... IV.2-56

IV.3 METEOROLOGY AND CLIMATE CHANGE IV.3-1
IV.3.1 Approach to Impact Analysis IV.3-1
IV.3.1.1 General Methods IV.3-1
IV.3.1.2 California Environmental Quality Act (CEQA) Standards of Significance IV.3-2
IV.3.2 Typical Impacts Common to All Action Alternatives IV.3-2
IV.3.2.1 Impacts of Renewable Energy and Transmission Development IV.3-3
IV.3.2.2 Impacts of the Reserve Design IV.3-5
IV.3.2.3 Impacts of Bureau of Land Management (BLM) Land Use Plan Decisions IV.3-5
IV.3.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.3-6
IV.3.3 Impact Analysis by Alternative IV.3-6
IV.3.3.1 No Action Alternative IV.3-7
IV.3.3.2 Preferred Alternative IV.3-15
IV.3.3.3 Alternative 1 ..... IV.3-23
IV.3.3.4 Alternative 2 ..... IV.3-29
IV.3.3.5 Alternative 3 ..... IV.3-36
IV.3.3.6 Alternative 4 ..... IV.3-43

IV.4 GEOLOGY AND SOILS IV.4-1
IV.4.1 Approach to Impact Analysis IV.4-1
IV.4.1.1 General Methods IV.4-1
IV.4.1.2 CEQA Standards of Significance IV.4-2

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.4.2 Typical Impacts Common to All Action Alternatives IV.4-3
IV.4.2.1 Impacts of Renewable Energy and Transmission Development IV.4-4
IV.4.2.2 Impacts of the Reserve Design IV.4-7
IV.4.2.3 Impacts of BLM Land Use Plan Decisions IV.4-7
IV.4.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.4-8
IV.4.3 Impact Analysis by Alternative IV.4-8
IV.4.3.1 No Action Alternative IV.4-8
IV.4.3.2 Preferred Alternative IV.4-21
IV.4.3.3 Alternative 1 ..... IV.4-37
IV.4.3.4 Alternative 2 ..... IV.4-46
IV.4.3.5 Alternative 3 ..... IV.4-56
IV.4.3.6 Alternative 4 ..... IV.4-65

IV.5 FLOOD HAZARD, HYDROLOGY, AND DRAINAGE IV.5-1
IV.5.1 Approach to Impact Analysis IV.5-1
IV.5.1.1 General Methods IV.5-1
IV.5.1.2 CEQA Standards of Significance IV.5-4
IV.5.2 Typical Impacts Common to All Action Alternatives IV.5-6
IV.5.2.1 Impacts of Renewable Energy and Transmission Development IV.5-6
IV.5.2.2 Impacts of the Reserve Design IV.5-10
IV.5.2.3 Impacts of BLM Land Use Plan Decisions IV.5-10
IV.5.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.5-11
IV.5.3 Impact Analysis by Alternative IV.5-12
IV.5.3.1 No Action Alternative IV.5-12
IV.5.3.2 Preferred Alternative IV.5-26
IV.5.3.3 Alternative 1 ..... IV.5-45
IV.5.3.4 Alternative 2 ..... IV.5-58
IV.5.3.5 Alternative 3 ..... IV.5-71
IV.5.3.6 Alternative 4 ..... IV.5-84

IV.6 GROUNDWATER, WATER SUPPLY, AND WATER QUALITY IV.6-1
IV.6.1 Approach to Impact Analysis IV.6-1
IV.6.1.1 General Methods IV.6-2
IV.6.1.2 CEQA Standards of Significance IV.6-4

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.6.2 Typical Impacts Common to All Action Alternatives IV.6-6
IV.6.2.1 Impacts of Renewable Energy and Transmission Development IV.6-7
IV.6.2.2 Impacts of the Reserve Design IV.6-9
IV.6.2.3 Impacts of BLM Land Use Plan Decisions IV.6-9
IV.6.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.6-10
IV.6.3 Impact Analysis by Alternative IV.6-10
IV.6.3.1 No Action Alternative IV.6-10
IV.6.3.2 Preferred Alternative IV.6-23
IV.6.3.3 Alternative 1 ..... IV.6-48
IV.6.3.4 Alternative 2 ..... IV.6-62
IV.6.3.5 Alternative 3 ..... IV.6-77
IV.6.3.6 Alternative 4 ..... IV.6-91

IV.7 BIOLOGICAL RESOURCES IV.7-1
IV.7.1 Approach to Impact Analysis IV.7-2
IV.7.1.1 General Methods IV.7-2
IV.7.1.2 CEQA Standards of Significance IV.7-23
IV.7.2 Typical Impacts Common to All Action Alternatives IV.7-24
IV.7.2.1 Impacts of Renewable Energy and Transmission Development IV.7-24
IV.7.2.2 Impacts of the Reserve Design IV.7-48
IV.7.2.3 Impacts of BLM Land Use Plan Decisions IV.7-48
IV.7.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.7-49
IV.7.3 Impact Analysis by Alternative IV.7-49
IV.7.3.1 No Action Alternative IV.7-49
IV.7.3.2 Preferred Alternative IV.7-215
IV.7.3.3 Alternative 1 ..... IV.7-493
IV.7.3.4 Alternative 2 ..... IV.7-755
IV.7.3.5 Alternative 3 ..... IV.7-1021
IV.7.3.6 Alternative 4 ..... IV.7-1285

IV.8 CULTURAL RESOURCES IV.8-1
IV.8.1 Approach to Impact Analysis IV.8-1
IV.8.1.1 General Methods IV.8-2
IV.8.1.2 CEQA Standards of Significance IV.8-3

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.8.2 Typical Impacts Common to All Alternatives IV.8-3
IV.8.2.1 Impacts of Renewable Energy and Transmission Development IV.8-4
IV.8.2.2 Impacts of the Reserve Design IV.8-9
IV.8.2.3 Impacts of BLM Land Use Plan Decisions IV.8-10
IV.8.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.8-10
IV.8.3 Impact Analysis by Alternative IV.8-11
IV.8.3.1 No Action Alternative IV.8-11
IV.8.3.2 Preferred Alternative IV.8-32
IV.8.3.3 Alternative 1 ..... IV.8-55
IV.8.3.4 Alternative 2 ..... IV.8-69
IV.8.3.5 Alternative 3 ..... IV.8-83
IV.8.3.6 Alternative 4 ..... IV.8-97

IV.9 NATIVE AMERICAN INTERESTS IV.9-1
IV.9.1 Approach to Impact Analysis IV.9-1
IV.9.1.1 General Methods IV.9-2
IV.9.1.2 CEQA Standards of Significance IV.9-5
IV.9.2 Typical Impacts Common to All Action Alternatives IV.9-5
IV.9.2.1 Impacts of Renewable Energy and Transmission Development IV.9-7
IV.9.2.2 Impacts of the Reserve Design IV.9-9
IV.9.2.3 Impacts of BLM Land Use Plan Decisions IV.9-9
IV.9.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.9-10
IV.9.3 Impact Analysis by Alternative IV.9-10
IV.9.3.1 No Action Alternative IV.9-11
IV.9.3.2 Preferred Alternative IV.9-24
IV.9.3.3 Alternative 1 ..... IV.9-46
IV.9.3.4 Alternative 2 ..... IV.9-63
IV.9.3.5 Alternative 3 ..... IV.9-78
IV.9.3.6 Alternative 4 ..... IV.9-93

IV.10 PALEONTOLOGICAL RESOURCES IV.10-1
IV.10.1 Approach to Impact Analysis IV.10-1
IV.10.1.1 General Methods IV.10-1
IV.10.1.2 CEQA Standards of Significance IV.10-5

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.10.2 Typical Impacts Common to All Action Alternatives....IV.10-6
IV.10.2.1 Impacts of Renewable Energy and Transmission Development....IV.10-7
IV.10.2.2 Impacts of the Reserve Design....IV.10-12
IV.10.2.3 Impacts of BLM Land Use Plan Decisions....IV.10-12
IV.10.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan....IV.10-14
IV.10.3 Impact Analysis by Alternative....IV.10-14
IV.10.3.1 No Action Alternative....IV.10-15
IV.10.3.2 Preferred Alternative....IV.10-27
IV.10.3.3 Alternative 1....IV.10-45
IV.10.3.4 Alternative 2....IV.10-58
IV.10.3.5 Alternative 3....IV.10-71
IV.10.3.6 Alternative 4....IV.10-83

IV.11 LAND USE AND POLICIES....IV.11-1
IV.11.1 Approach to Impact Analysis....IV.11-2
IV.11.1.1 General Methods....IV.11-2
IV.11.1.2 CEQA Standards of Significance....IV.11-3
IV.11.2 Typical Impacts Common to All Action Alternatives....IV.11-6
IV.11.2.1 Impacts of Renewable Energy and Transmission Development....IV.11-6
IV.11.2.2 Impacts of the Reserve Design....IV.11-8
IV.11.2.3 Impacts of BLM Land Use Plan Decisions....IV.11-8
IV.11.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan....IV.11-9
IV.11.3 Impact Analysis by Alternative....IV.11-10
IV.11.3.1 No Action Alternative....IV.11-11
IV.11.3.2 Preferred Alternative....IV.11-19
IV.11.3.3 Alternative 1....IV.11-28
IV.11.3.4 Alternative 2....IV.11-36
IV.11.3.5 Alternative 3....IV.11-44
IV.11.3.6 Alternative 4....IV.11-51

IV.12 AGRICULTURAL LAND AND PRODUCTION....IV.12-1
IV.12.1 Approach to Impact Analysis....IV.12-1
IV.12.1.1 General Methods....IV.12-1
IV.12.1.2 CEQA Standards of Significance....IV.12-2

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.12.2 Typical Impacts Common to All Action Alternatives....IV.12-3
IV.12.2.1 Impacts of Renewable Energy and Transmission Development....IV.12-3
IV.12.2.2 Impacts of the Reserve Design....IV.12-4
IV.12.2.3 Impacts of BLM Land Use Plan Decisions....IV.12-5
IV.12.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan....IV.12-5
IV.12.3 Impact Analysis by Alternative....IV.12-6
IV.12.3.1 No Action Alternative....IV.12-7
IV.12.3.2 Preferred Alternative....IV.12-13
IV.12.3.3 Alternative 1....IV.12-22
IV.12.3.4 Alternative 2....IV.12-27
IV.12.3.5 Alternative 3....IV.12-32
IV.12.3.6 Alternative 4....IV.12-37

IV.13 BLM LANDS AND REALTY—LAND USE AUTHORIZATIONS AND LAND TENURE....IV.13-1
IV.13.1 Approach to Impact Analysis....IV.13-1
IV.13.1.1 General Methods....IV.13-1
IV.13.1.2 CEQA Standards of Significance....IV.13-1
IV.13.2 Typical Impacts Common to All Action Alternatives....IV.13-2
IV.13.2.1 Impacts of Renewable Energy and Transmission Development....IV.13-2
IV.13.2.2 Impacts of the Reserve Design....IV.13-3
IV.13.2.3 Impacts of BLM Land Use Plan Decisions....IV.13-3
IV.13.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan....IV.13-4
IV.13.3 Impact Analysis by Alternative....IV.13-5
IV.13.3.1 No Action Alternative....IV.13-5
IV.13.3.2 Preferred Alternative....IV.13-14
IV.13.3.3 Alternative 1....IV.13-29
IV.13.3.4 Alternative 2....IV.13-39
IV.13.3.5 Alternative 3....IV.13-48
IV.13.3.6 Alternative 4....IV.13-57

IV.14 BLM LAND DESIGNATIONS, CLASSIFICATIONS, ALLOCATIONS, AND LANDS WITH WILDERNESS CHARACTERISTICS....IV.14-1
IV.14.1 Approach to Impact Analysis....IV.14-2

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.14.1.1 General Methods IV.14-2
IV.14.1.2 CEQA Standards of Significance IV.14-3
IV.14.2 Typical Impacts Common to All Action Alternatives IV.14-3
IV.14.2.1 Impacts of Renewable Energy and Transmission Development IV.14-3
IV.14.2.2 Impacts of the Reserve Design IV.14-4
IV.14.2.3 Impacts of BLM Land Use Plan Decisions IV.14-5
IV.14.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.14-5
IV.14.3 Impact Analysis by Alternative IV.14-6
IV.14.3.1 No Action Alternative IV.14-6
IV.14.3.2 Preferred Alternative IV.14-16
IV.14.3.3 Alternative 1 ..... IV.14-35
IV.14.3.4 Alternative 2 ..... IV.14-48
IV.14.3.5 Alternative 3 ..... IV.14-62
IV.14.3.6 Alternative 4 ..... IV.14-76

IV.15 MINERAL RESOURCES IV.15-1
IV.15.1 Approach to Impact Analysis IV.15-1
IV.15.1.1 General Methods IV.15-1
IV.15.1.2 CEQA Standards of Significance IV.15-2
IV.15.2 Typical Impacts Common to All Action Alternatives IV.15-2
IV.15.2.1 Impacts of Renewable Energy and Transmission Development IV.15-2
IV.15.2.2 Impacts of the Reserve Design IV.15-4
IV.15.2.3 Impacts of BLM Land Use Plan Decisions IV.15-4
IV.15.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.15-5
IV.15.3 Impact Analysis by Alternative IV.15-5
IV.15.3.1 No Action Alternative IV.15-6
IV.15.3.2 Preferred Alternative IV.15-16
IV.15.3.3 Alternative 1 ..... IV.15-42
IV.15.3.4 Alternative 2 ..... IV.15-67
IV.15.3.5 Alternative 3 ..... IV.15-92
IV.15.3.6 Alternative 4 ..... IV.15-116
IV.15.3.7 Summary of Alternatives IV.15-140

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.16 LIVESTOCK GRAZING IV.16-1
IV.16.1 Approach to Impact Analysis IV.16-1
IV.16.1.1 General Methods IV.16-1
IV.16.1.2 CEQA Standards of Significance IV.16-2
IV.16.2 Typical Impacts Common to All Action Alternatives IV.16-2
IV.16.2.1 Impacts of Renewable Energy and Transmission Development IV.16-3
IV.16.2.2 Impacts of the Reserve Design IV.16-4
IV.16.2.3 Impacts of BLM Land Use Plan Decisions IV.16-4
IV.16.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.16-5
IV.16.3 Impact Analysis by Alternative IV.16-6
IV.16.3.1 No Action Alternative IV.16-9
IV.16.3.2 Preferred Alternative IV.16-18
IV.16.3.3 Alternative 1 ..... IV.16-29
IV.16.3.4 Alternative 2 ..... IV.16-38
IV.16.3.5 Alternative 3 ..... IV.16-47
IV.16.3.6 Alternative 4 ..... IV.16-56

IV.17 WILD HORSES AND BURROS IV.17-1
IV.17.1 Approach to Impact Analysis IV.17-1
IV.17.1.1 General Methods IV.17-1
IV.17.1.2 CEQA Standards of Significance IV.17-1
IV.17.2 Typical Impacts Common to All Action Alternatives IV.17-2
IV.17.2.1 Impacts of Renewable Energy and Transmission Development IV.17-2
IV.17.2.2 Impacts of the Reserve Design IV.17-4
IV.17.2.3 Impacts of BLM Land Use Plan Decisions IV.17-5
IV.17.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.17-6
IV.17.3 Impact Analysis by Alternative IV.17-6
IV.17.3.1 No Action Alternative IV.17-6
IV.17.3.2 Preferred Alternative IV.17-14
IV.17.3.3 Alternative 1 ..... IV.17-25
IV.17.3.4 Alternative 2 ..... IV.17-33
IV.17.3.5 Alternative 3 ..... IV.17-42
IV.17.3.6 Alternative 4 ..... IV.17-51

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.18 OUTDOOR RECREATION IV.18-1
IV.18.1 Approach to Impact Analysis IV.18-1
IV.18.1.1 General Methods IV.18-1
IV.18.1.2 CEQA Standards of Significance IV.18-2
IV.18.2 Typical Impacts Common to All Action Alternatives IV.18-2
IV.18.2.1 Impacts of Renewable Energy and Transmission Development IV.18-2
IV.18.2.2 Impacts of the Reserve Design IV.18-4
IV.18.2.3 Impacts of BLM Land Use Plan Decisions IV.18-5
IV.18.2.4 Impacts of the Natural Community Conservation Plan and General Conservation Plan IV.18-6
IV.18.3 Impact Analysis by Alternative IV.18-7
IV.18.3.1 No Action Alternative IV.18-13
IV.18.3.2 Preferred Alternative IV.18-24
IV.18.3.3 Alternative 1 ..... IV.18-39
IV.18.3.4 Alternative 2 ..... IV.18-49
IV.18.3.5 Alternative 3 ..... IV.18-59
IV.18.3.6 Alternative 4 ..... IV.18-69

IV.19 TRANSPORTATION AND PUBLIC ACCESS IV.19-1
IV.19.1 Approach to Impact Analysis IV.19-1
IV.19.1.1 General Methods IV.19-1
IV.19.1.2 CEQA Standards of Significance IV.19-2
IV.19.2 Typical Impacts Common to All Action Alternatives IV.19-3
IV.19.2.1 Impacts of Renewable Energy and Transmission Development IV.19-3
IV.19.2.2 Impacts of the Reserve Design IV.19-7
IV.19.2.3 Impacts of BLM Land Use Plan Decisions IV.19-7
IV.19.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.19-8
IV.19.3 Impact Analysis by Alternative IV.19-9
IV.19.3.1 No Action Alternative IV.19-9
IV.19.3.2 Preferred Alternative IV.19-18
IV.19.3.3 Alternative 1 ..... IV.19-30
IV.19.3.4 Alternative 2 ..... IV.19-38
IV.19.3.5 Alternative 3 ..... IV.19-46
IV.19.3.6 Alternative 4 ..... IV.19-54

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.20 VISUAL RESOURCES IV.20-1
IV.20.1 Approach to Impact Analysis IV.20-1
IV.20.1.1 General Methods IV.20-1
IV.20.1.2 CEQA Standards of Significance IV.20-2
IV.20.2 Typical Impacts Common to All Action Alternatives IV.20-2
IV.20.2.1 Impacts of Renewable Energy and Transmission Development IV.20-3
IV.20.2.2 Impacts of the Reserve Design IV.20-8
IV.20.2.3 Impacts of BLM Land Use Plan Decisions IV.20-11
IV.20.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.20-12
IV.20.3 Impact Analysis by Alternative IV.20-12
IV.20.3.1 No Action Alternative IV.20-12
IV.20.3.2 Preferred Alternative IV.20-33
IV.20.3.3 Alternative 1 ..... IV.20-56
IV.20.3.4 Alternative 2 ..... IV.20-73
IV.20.3.5 Alternative 3 ..... IV.20-90
IV.20.3.6 Alternative 4 ..... IV.20-107

IV.21 NOISE AND VIBRATION IV.21-1
IV.21.1 Approach to Impact Analysis IV.21-1
IV.21.1.1 General Methods IV.21-1
IV.21.1.2 CEQA Standards of Significance IV.21-2
IV.21.2 Typical Impacts Common to All Action Alternatives IV.21-3
IV.21.2.1 Impacts of Renewable Energy and Transmission Development IV.21-3
IV.21.2.2 Impacts of the Reserve Design IV.21-8
IV.21.2.3 Impacts of BLM Land Use Plan Decisions IV.21-9
IV.21.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.21-9
IV.21.3 Impact Analysis by Alternative IV.21-10
IV.21.3.1 No Action Alternative IV.21-10
IV.21.3.2 Preferred Alternative IV.21-24
IV.21.3.3 Alternative 1 ..... IV.21-34
IV.21.3.4 Alternative 2 ..... IV.21-40
IV.21.3.5 Alternative 3 ..... IV.21-46
IV.21.3.6 Alternative 4 ..... IV.21-52

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.22 PUBLIC HEALTH, SAFETY, AND SERVICES IV.22-1
IV.22.1 Approach to Impact Analysis IV.22-1
IV.22.1.1 General Methods IV.22-1
IV.22.1.2 California Environmental Quality Act Standards of Significance IV.22-2
IV.22.2 Typical Impacts Common to All Action Alternatives IV.22-4
IV.22.2.1 Impacts of Renewable Energy and Transmission Development IV.22-4
IV.22.2.2 Impacts of the Reserve Design IV.22-14
IV.22.2.3 Impacts of Bureau of Land Management Land Use Plan Decisions IV.22-14
IV.22.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.22-15
IV.22.3 Impact Analysis by Alternative IV.22-16
IV.22.3.1 No Action Alternative IV.22-16
IV.22.3.2 Preferred Alternative IV.22-25
IV.22.3.3 Alternative 1 ..... IV.22-34
IV.22.3.4 Alternative 2 ..... IV.22-40
IV.22.3.5 Alternative 3 ..... IV.22-45
IV.22.3.6 Alternative 4 ..... IV.22-51

IV.23 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE IV.23-1
IV.23.1 Approach to Impact Analysis IV.23-1
IV.23.1.1 General Methods IV.23-1
IV.23.1.2 CEQA Standards of Significance IV.23-8
IV.23.2 Typical Impacts Common to All Action Alternatives IV.23-9
IV.23.2.1 Impacts of Renewable Energy and Transmission Development IV.23-9
IV.23.2.2 Impacts of the Reserve Design IV.23-12
IV.23.2.3 Impacts of BLM Land Use Plan Decisions IV.23-13
IV.23.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.23-14
IV.23.2.5 Environmental Justice IV.23-14
IV.23.3 Impact Analysis by Alternative IV.23-17
IV.23.3.1 No Action Alternative IV.23-17
IV.23.3.2 Preferred Alternative IV.23-27
IV.23.3.3 Alternative 1 ..... IV.23-50

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.23.3.4 Alternative 2 ..... IV.23-58
IV.23.3.5 Alternative 3 ..... IV.23-66
IV.23.3.6 Alternative 4 ..... IV.23-75

IV.24 DEPARTMENT OF DEFENSE LANDS AND OPERATIONS IV.24-1
IV.24.1 Approach to Impact Analysis IV.24-1
IV.24.1.1 General Methods IV.24-1
IV.24.1.2 California Environmental Quality Act Standards of Significance IV.24-1
IV.24.2 Typical Impacts Common to All Action Alternatives IV.24-1
IV.24.2.1 Impacts of Renewable Energy and Transmission Development IV.24-2
IV.24.2.2 Impacts of the Reserve Design IV.24-3
IV.24.2.3 Impacts of BLM Land Use Plan Decisions IV.24-4
IV.24.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan IV.24-4
IV.24.3 Impact Analysis by Alternative IV.24-5
IV.24.3.1 No Action Alternative IV.24-5
IV.24.3.2 Preferred Alternative IV.24-12
IV.24.3.3 Alternative 1 ..... IV.24-22
IV.24.3.4 Alternative 2 ..... IV.24-29
IV.24.3.5 Alternative 3 ..... IV.24-37
IV.24.3.6 Alternative 4 ..... IV.24-45

V.25 CUMULATIVE IMPACTS ANALYSIS IV.25-1
IV.25.1 Introduction and Methodology IV.25-1
IV.25.1.1 Legal Requirements IV.25-1
IV.25.1.2 Methodology IV.25-2
IV.25.1.3 Projects Included in the Cumulative List IV.25-4
IV.25.2 Applicable Cumulative Projects and Projections IV.25-5
IV.25.2.1 Cumulative Projects IV.25-5
IV.25.2.2 Cumulative Projections IV.25-16
IV.25.3 Cumulative Impacts Analysis IV.25-29
IV.25.3.1 Introduction IV.25-29
IV.25.3.2 Air Quality IV.25-30
IV.25.3.3 Meteorology and Climate Change IV.25-36
IV.25.3.4 Geology and Soils IV.25-37
IV.25.3.5 Flood, Hydrology, and Drainage Areas IV.25-41

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.25.3.6 Groundwater, Water Supply, and Water Quality IV.25-45
IV.25.3.7 Biological Resources IV.25-50
IV.25.3.8 Cultural Resources IV.25-80
IV.25.3.9 Native American Interests IV.25-85
IV.25.3.10 Paleontological Resources IV.25-88
IV.25.3.11 Land Uses and Policies IV.25-92
IV.25.3.12 Agricultural Land and Production IV.25-94
IV.25.3.13 BLM Lands and Realty—Rights-of-Way and Land Tenure IV.25-96
IV.25.3.14 BLM Land Designations, Classifications, Allocations, and Lands With Wilderness Characteristics IV.25-98
IV.25.3.15 Mineral Resources IV.25-99
IV.25.3.16 Livestock Grazing IV.25-101
IV.25.3.17 Wild Horses and Burros IV.25-104
IV.25.3.18 Outdoor Recreation IV.25-106
IV.25.3.19 Transportation and Public Access IV.25-109
IV.25.3.20 Visual Resources IV.25-112
IV.25.3.21 Noise and Vibration IV.25-115
IV.25.3.22 Public Health, Safety, and Services IV.25-117
IV.25.3.23 Socioeconomics and Environmental Justice IV.25-122
IV.25.3.24 Department of Defense Lands and Operations IV.25-128

IV.26 OTHER CALIFORNIA ENVIRONMENTAL QUALITY ACT AND NATIONAL ENVIRONMENTAL POLICY ACT CONSIDERATIONS IV.26-1
IV.26.1 CEQA Requirements IV.26-1
IV.26.1.1 Significant Environment Effects That Cannot Be Avoided and Effects Not Found to Be Significant IV.26-4
IV.26.1.2 Significant Irreversible Environmental Changes IV.26-28
IV.26.1.3 Growth-Inducing Impacts IV.26-29
IV.26.1.4 Energy Conservation IV.26-30
IV.26.2 NEPA Requirements IV.26-31
IV.26.2.1 Relationship of Short-Term Uses of the Environment and Long-Term Productivity IV.26-31
IV.26.2.2 Irreversible and Irretrievable Commitment of Resources IV.26-33

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

IV.26.2.3 Energy Requirements and Conservation Potential of Various Alternatives and Mitigation Measures IV.26-33
IV.26.2.4 Indirect Effects Including Growth-Inducing Effects IV.26-34

IV.27 COMPARISON OF ALTERNATIVES IV.27-1
IV.27.1 Regulatory Guidance on Comparison of Alternatives IV.27-1
IV.27.1.1 CEQA Considerations IV.27-1
IV.27.1.2 NEPA Considerations IV.27-2
IV.27.2 Plan-wide Alternatives Descriptions and Comparisons IV.27-2
IV.27.2.1 Description of Plan-wide Alternatives IV.27-2
IV.27.2.2 Comparison of Plan-wide Alternatives IV.27-3
IV.27.2.3 Conclusion Regarding Environmentally Superior Alternative for the California Energy Commission IV.27-4
IV.27.3 BLM LUPA Alternatives Descriptions and Comparisons IV.27-4
IV.27.3.1 Description of BLM LUPA Alternatives IV.27-4
IV.27.3.2 Comparison of BLM LUPA Alternatives IV.27-4
IV.27.4 NCCP Alternatives Descriptions and Comparisons IV.27-5
IV.27.4.1 Description of NCCP Alternatives IV.27-5
IV.27.4.2 Comparison of NCCP Alternatives IV.27-5
IV.27.5 GCP Alternatives Descriptions and Comparisons IV.27-5
IV.27.5.1 Description of GCP Alternatives IV.27-5
IV.27.5.2 Comparison of GCP Alternatives IV.27-6
IV.27.6 Planning Goals IV.27-6

IV.28 LITERATURE CITED – VOLUME IV IV.28-1
Chapter IV.1 Environmental Setting/Affected Environment IV.28-1
Chapter IV.2 Air Quality IV.28-1
Chapter IV.3 Meteorology and Climate Change IV.28-1
Chapter IV.4 Geology and Soils IV.28-1
Chapter IV.5 Flood Hazard, Hydrology, and Drainage IV.28-1
Chapter IV.6 Groundwater, Water Supply, and Water Quality IV.28-2
Chapter IV.7 Biological Resources IV.28-2
Chapter IV.8 Cultural Resources IV.28-11
Chapter IV.9 Native American Interests IV.28-13
Chapter IV.10 Paleontological Resources IV.28-13
Chapter IV.11 Land Uses and Policies IV.28-14
Chapter IV.12 Agricultural Land and Production IV.28-14

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

Chapter IV.13 BLM Lands and Realty—Rights-of-way and Land Tenure IV.28-14
Chapter IV.14 BLM Special Designations, Classifications, Allocations, and Lands With Wilderness Characteristics IV.28-14
Chapter IV.15 Mineral Resources IV.28-14
Chapter IV.16 Livestock Grazing IV.28-14
Chapter IV.17 Wild Horses and Burros IV.28-14
Chapter IV.18 Outdoor Recreation IV.28-14
Chapter IV.19 Transportation and Public Access IV.28-14
Chapter IV.20 Visual/Aesthetic Resources IV.28-15
Chapter IV.21 Noise and Vibration IV.28-15
Chapter IV.22 Public Safety and Services IV.28-16
Chapter IV.23 Socioeconomics and Environmental Justice IV.28-17
Chapter IV.24 Department of Defense Lands and Operations IV.28-18
Chapter IV.25 Cumulative Impacts Analysis IV.28-18
Chapter IV.26 Other Required NEPA and CEQA Analyses IV.28-27
Chapter IV.27 Comparison of Alternatives IV.28-27

VOLUME V: CONSULTATION, COORDINATION, AND PUBLIC PARTICIPATION

V. CONSULTATION, COORDINATION, AND PUBLIC PARTICIPATION V-1
V.1 Public Scoping and Public Outreach V-1
V.1.1 Scoping Process V-1
V.1.2 Scoping Issues Raised by Commenters V-3
V.1.3 Consideration of Scoping Comments and Other Input Received V-4
V.1.4 Additional Opportunities for Public Comment V-4
V.2 Stakeholder Involvement V-5
V.3 Additional Outreach During EIR/EIS Preparation V-6
V.3.1 Agency and Public Workshops V-6
V.3.2 Data Basin Geographic Information System Tool V-6
V.4 Government-to-Government Consultation V-7
V.4.1 Federal Outreach V-7
V.4.2 BLM Section 106 Consultation V-8
V.4.3 USFWS Section 106 Consultation V-10

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

V.4.4 State Consultation V-11
V.5 Agency Cooperation, Consultation, and Coordination V-12

VOLUME VI: MITIGATION MONITORING AND REPORTING PLAN

VI. MITIGATION MONITORING AND REPORTING PLAN VI-1
VI.1 Authority for Mitigation Monitoring, Compliance, and Reporting VI-1
VI.1.1 California Public Agencies VI-1
VI.1.2 Bureau of Land Management and Other Federal Agencies VI-2
VI.2 Administration of the MMCRP VI-2
VI.3 Mitigation Compliance Responsibility VI-3
VI.4 Organization of the MMRCP VI-4
VI.5 Enforcement VI-4

APPENDICES

A. Desert Renewable Energy Conservation Plan Stakeholders and Memoranda of Understanding Timeline
   1. Desert Renewable Energy Conservation Plan Stakeholders
   2. Timeline of Memoranda of Understanding (MOUs) and Agreements Related to the DRECP
B. Selection of DRECP Proposed Covered Species: Process and Methods
C. Biological Goals and Objectives
D. Reserve Design Development Process and Methods
E. Summary of Responses to Independent Science Reviews
F. Megawatt Distribution
   1. Methods for Megawatt Distribution
   2. Megawatt Hours and Solar Technology Distribution
   3. DRECP Acreage Calculator
G. Supplemental Alternatives Maps
H. Conservation and Management Actions Documentation
I. Cost and Funding
J. Department of Defense Materials
   1. California Compatible Initiative
   2. DOD Conflict Maps
K. Transmission Technical Group Report
L. Bureau of Land Management Worksheets
M. U.S. Fish and Wildlife Service General Conservation Plan
N. California Department of Fish and Wildlife Natural Community Conservation Plan
   1. Natural Community Conservation Plan
   2. Proportionality Estimates
O. Existing Renewable Energy Projects Within DRECP Plan Area
P. Climate Change
Q. Baseline Biology Report
R. Data Supporting Volumes III and IV
S. Approach to Assigning Plan-Wide Conservation Assumptions in the Reserve
T. Scoping Report: Desert Renewable Energy Conservation Plan Environmental Impact Report / Environmental Impact Statement
U. List of Preparers
V. Government-to-Government and Cultural Resource Consultations
W. Solar PEIS Design Features
X. Proposed National Monuments and Catellus Agreement Lands Supplemental Information

TABLE OF CONTENTS (CONTINUED)

Page No.

FIGURES

I.0-1 DRECP Plan Area I.0-3
I.0-2 Land Use Plan Amendment Lands I.0-9
I.0-3 Natural Community Conservation Plan Lands I.0-11
I.0-4 General Conservation Plan Lands I.0-13
I.3-1 Reserve Design Envelope I.3-31
II.2-1 No Action Alternative II.2-5
II.2-2 BLM Decision Area and Applicable Existing Management II.2-27
II.2.3 Solar Programmatic Environmental Impact Statement Designations II.2-29
II.2-4 Geothermal Programmatic Environmental Impact Statement Areas Available for Leasing II.2-33
II.3-1 Preferred Alternative II.3-7
II.3-2 Preferred Alternative - Plan-Wide Reserve Design II.3-19
II.3-3 Preferred Alternative - Plan-Wide DFAs II.3-163
II.3-4 Preferred Alternative - BLM LUPA II.3-301
II.3-5 Preferred Alternative - Visual Resource Management Classes II.3-417
II.3-6 Preferred Alternative - Lands Managed to Protect Wilderness Characteristics II.3-435
II.3-7 Preferred Alternative – Natural Community Conservation Plan II.3-441
II.3-8 Preferred Alternative - General Conservation Plan II.3-447
II.4-1 Alternative 1 ..... II.4-5
II.4-2 Alternative 1 - Plan-Wide Reserve Design Envelope II.4-11
II.4-3 Alternative 1 - Plan-Wide DFAs II.4-19
II.4-4 Alternative 1 - BLM LUPA II.4-31
II.4-5 Alternative 1 - Visual Resource Management Classes II.4-57
II.4-6 Alternative 1 - Natural Community Conservation Plan II.4-59
II.4-7 Alternative 1 - General Conservation Plan II.4-61
II.5-1 Alternative 2 ..... II.5-5
II.5-2 Alternative 2 - Plan-Wide Reserve Design Envelope II.5-11
II.5-3 Alternative 2 - Plan-Wide DFAs II.5-21
II.5-4 Alternative 2 - BLM LUPA II.5-37
II.5-5 Alternative 2 - Lands Managed to Protect Wilderness Characteristics II.5-59
II.5-6 Alternative 2 - Visual Resource Management Classes II.5-65
II.5-7 Alternative 2 - Natural Community Conservation Plan II.5-67
II.5-8 Alternative 2 - General Conservation Plan II.5-69
II.6-1 Alternative 3 ..... II.6-5

TABLE OF CONTENTS (CONTINUED)

Page No.

II.6-2	Alternative 3 - Plan-Wide Reserve Design Envelope	II.6-11
II.6-3	Alternative 3 - Plan-Wide DFAs	II.6-15
II.6-4	Alternative 3 - BLM LUPA	II.6-31
II.6-5	Alternative 3 - Lands Managed to Protect Wilderness Characteristics	II.6-51
II.6-6	Alternative 3 - Visual Resource Management Classes	II.6-55
II.6-7	Alternative 3 - Natural Community Conservation Plan	II.6-57
II.6-8	Alternative 3 - General Conservation Plan	II.6-61
II.7-1	Alternative 4	II.7-5
II.7-2	Alternative 4 - Plan-Wide Reserve Design Envelope	II.7-11
II.7-3	Alternative 4 - Plan-Wide DFAs	II.7-19
II.7-4	Alternative 4 - BLM LUPA	II.7-31
II.7-5	Alternative 4 - Visual Resource Management Classes	II.7-53
II.7-6	Alternative 4 – Natural Community Conservation Plan	II.7-57
II.7-7	Alternative 4 - General Conservation Plan	II.7-59
II.8-1	DRECP Plan-Wide Energy Assumptions - CEERT, LSA, and CalWEA Proposals	II.8-11
II.8-2	Scenario 6	II.8-25
II.8-3	Southeast Emphasis Alternative	II.8-27
III.1-1	DRECP Plan Area and Ecoregion Subareas	III.1-3
III.1-2a	Existing Renewable Energy Projects in DRECP Area (Western Portion)	III.1-9
III.1-2b	Existing Renewable Energy Projects in DRECP Area (Eastern Portion)	III.1-11
III.2-1	Federal Class I Areas	III.2-11
III.2-2	Air District Boundaries	III.2-17
III.2-3	Air Basins	III.2-21
III.2-4	1997 Federal 8-hour Ozone Attainment Status	III.2-29
III.2-5	2008 Federal 8-hour Ozone Attainment Status	III.2-31
III.2-6	Federal PM10 Attainment Status	III.2-33
III.2-7	Federal PM2.5 Attainment Status	III.2-35
III.2-8	State PM2.5 Attainment Status	III.2-45
III.2-9	State H_2S Attainment Status	III.2-53
III.4-1	Surficial Geology	III.4-7
III.4-2	Dune Systems and Sand Transport Corridors within the Plan Area	III.4-19
III.4-3	Potentially Corrosive Soils within the Plan Area	III.4-23
III.4-4	Earthquake Faults within the Plan Area	III.4-25
III.4-5	Earthquake Faults within the Imperial Borrego Valley Ecoregion Subarea	III.4-27

TABLE OF CONTENTS (CONTINUED)

Page No.

III.4-6 Earthquake Faults within the Kingston and Funeral Mountains Ecoregion Subarea III.4-29
III.4-7 Earthquake Faults within the Mojave and Silurian Valley Ecoregion Subarea III.4-31
III.4-8 Earthquake Faults within the Owens River Valley Ecoregion Subarea III.4-33
III.4-9 Earthquake Faults within the Panamint Death Valley Ecoregion Subarea III.4-35
III.4-10 Earthquake Faults within the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.4-37
III.4-11 Earthquake Faults within the Providence and Bullion Mountains Ecoregion Subarea III.4-39
III.4-12 Earthquake Faults within the West Mojave and Eastern Slopes Ecoregion Subarea III.4-41
III.4-13 Peak Horizontal Ground Acceleration within the Plan Area (Lands with a 10% probability of exceedance within 50 years) III.4-43
III.5-1 Linear and Areal Surface Water Resources and Watersheds in the Plan Area III.5-9
III.5-2 Named Water Bodies, Wetlands, and Flood Hazard Areas in the Plan Area III.5-11
III.5-3 Springs and Wild and Scenic Rivers in the Plan Area III.5-15
III.5-4 Stream Gages in the Plan Area III.5-21
III.6-1 Groundwater Basins and Data Availability III.6-23
III.6-2 Groundwater Basins Coupled or Possibly Tributary to Colorado River III.6-27
III.6-3 Groundwater Basins with Internal Fault Barriers III.6-31
III.6-4 Distribution of Reported Storage Capacity III.6-33
III.6-5 Distribution of Average Reported Irrigation and Municipal Well Yields III.6-37
III.6-6 Groundwater Basins That Receive Substantial Surface Water Supplies III.6-39
III.6-7 Estimated Average Annual Recharge by Ecoregion Subarea Assuming 0- to 15-percent of Precipitation Runoff Becomes Recharge III.6-43
III.6-8 Springs, Seeps and Playas III.6-47
III.6-9 Groundwater Basins with Evidence of Hydraulic Interconnection III.6-51
III.6-10 Cultivated Cropland III.6-53
III.6-11 Developed and Disturbed Lands III.6-55
III.6-12 Well Locations III.6-59
III.6-13 Estimated Groundwater Use III.6-61
III.6-14 Average Groundwater Salinity III.6-65
III.7-1 Surficial Geology III.7-13

TABLE OF CONTENTS (CONTINUED)

Page No.

III.7-2 Hydrology III.7-15
III.7-3 Natural Communities and Other Land Covers - Subarea Index Map III.7-35
III.7-4 Natural Communities and Other Land Covers - Cadiz Valley and Chocolate Mountains Subarea III.7-37
III.7-5 Natural Communities and Other Land Covers - Imperial Borrego Valley Subarea III.7-39
III.7-6 Natural Communities and Other Land Covers - Kingston and Funeral Mountains Subarea III.7-41
III.7-7 Natural Communities and Other Land Covers - Mojave and Silurian Valley Subarea III.7-43
III.7-8 Natural Communities and Other Land Covers - Owens River Valley Subarea III.7-45
III.7-9 Natural Communities and Other Land Covers - Panamint Death Valley Subarea III.7-47
III.7-10 Natural Communities and Other Land Covers - Pinto Lucerne Valley and Eastern Slopes Subarea III.7-49
III.7-11 Natural Communities and Other Land Covers - Piute Valley and Sacramento Mountains Subarea III.7-51
III.7-12 Natural Communities and Other Land Covers - Providence and Bullion Mountains Subarea III.7-53
III.7-13 Natural Communities and Other Land Covers - West Mojave and Eastern Slopes Subarea III.7-55
III.7-14 North American Migration Flyways III.7-113
III.7-15 Audubon Important Bird Areas III.7-115
III.7-16 Covered and Planning Species Occurrence Locations - Cadiz Valley and Chocolate Mountains Subarea III.7-129
III.7-17 Covered and Planning Species Occurrence Locations - Imperial Borrego Valley Subarea III.7-131
III.7-18 Covered and Planning Species Occurrence Locations - Kingston and Funeral Mountains Subarea III.7-133
III.7-19 Covered and Planning Species Occurrence Locations - Mojave and Silurian Valley Subarea III.7-135
III.7-20 Covered and Planning Species Occurrence Locations - Owens River Valley Subarea III.7-137
III.7-21 Covered and Planning Species Occurrence Locations - Panamint Death Valley Subarea III.7-139

TABLE OF CONTENTS (CONTINUED)

Page No.

III.7-22 Covered and Planning Species Occurrence Locations - Pinto Lucerne Valley and Eastern Slopes Subarea III.7-141
III.7-23 Covered and Planning Species Occurrence Locations - Piute Valley and Sacramento Mountains Subarea III.7-143
III.7-24 Covered and Planning Species Occurrence Locations - Providence and Bullion Mountains Subarea III.7-145
III.7-25 Covered and Planning Species Occurrence Locations - West Mojave and Eastern Slopes Subarea III.7-147
III.7-26 Habitat Linkages and Wildlife Movement Corridors – Ecoregion Subarea Index Map III.7-249
III.7-27 Habitat Linkages and Wildlife Movement Corridors - Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.7-251
III.7-28 Habitat Linkages and Wildlife Movement Corridors - Imperial Borrego Valley Ecoregion Subarea III.7-253
III.7-29 Habitat Linkages and Wildlife Movement Corridors - Kingston and Funeral Mountains Ecoregion Subarea III.7-255
III.7-30 Habitat Linkages and Wildlife Movement Corridors - Mojave and Silurian Valley Ecoregion Subarea III.7-257
III.7-31 Habitat Linkages and Wildlife Movement Corridors - Owens River Valley Ecoregion Subarea III.7-259
III.7-32 Habitat Linkages and Wildlife Movement Corridors - Panamint Death Valley Ecoregion Subarea III.7-261
III.7-33 Habitat Linkages and Wildlife Movement Corridors - Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.7-263
III.7-34 Habitat Linkages and Wildlife Movement Corridors - Piute Valley and Sacramento Mountains Ecoregion Subarea III.7-265
III.7-35 Habitat Linkages and Wildlife Movement Corridors - Providence and Bullion Mountains Ecoregion Subarea III.7-267
III.7-36 Habitat Linkages and Wildlife Movement Corridors - West Mojave and Eastern Slopes Ecoregion Subarea III.7-269
III.8-1 Tribal Linguistic Divisions in the Plan Area III.8-37
III.8-2 Tribal Territories in the Plan Area III.8-41
III.8-3 Surveyed Acres by DRECP Ecoregion Subarea III.8-77
III.9-1 Native American Elements Within the Plan Area III.9-5
III.10-1 Index of Detailed Geologic Mapping Available in Geographic Information System (Vector) Format III.10-13
III.10-2 Potential Fossil Yield Classification of Geology – Subarea Index Map III.10-15

TABLE OF CONTENTS (CONTINUED)

Page No.

III.11-1 Land Ownership in the Plan Area III.11-5
III.12-1 Williamson Act Lands within the Plan Area III.12-21
III.12-2 Important Farmland within the Plan Area III.12-23
III.14-1 Wilderness Areas, National Monuments, and National Historic and Scenic Trails Managed by BLM within the Plan Area III.14-19
III.14-2 Wild and Scenic Rivers Managed by BLM within the Plan Area III.14-23
III.14-3 Wilderness Study Areas within the Plan Area III.14-29
III.14-4 ACECs and Wildlife Management Areas on BLM-Managed Lands within the Plan Area III.14-35
III.14-5 Lands with Wilderness Characteristics Inventoried by BLM within the Plan Area III.14-41
III.15-1 Geothermal Resources within the Plan Area III.15-13
III.15-2 Existing High Priority Mineral and Energy Locations within the Plan Area III.15-17
III.15-3 Rare Earth Element Locations within the Plan Area III.15-23
III.15-4 Locatable, Leasable, and Mineral Material Areas within the Plan Area III.15-25
III.16-1 Grazing District and Grazing Allotments Within the Plan Area III.16-11
III.16-2 Grazing Allotments Within the BLM Bishop Field Office III.16-13
III.16-3 Grazing Allotments Within the BLM Bakersfield Field Office III.16-15
III.17-1 Wild Horse and Burro Herd Areas and Herd Management Areas Within the Plan Area III.17-5
III.18-1 Recreation Lands in the Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.18-25
III.18-2 Recreation Lands in the Imperial Borrego Valley Ecoregion Subarea III.18-27
III.18-3 Recreation Lands in the Kingston and Funeral Mountains Ecoregion Subarea III.18-29
III.18-4 Recreation Lands in the Mojave and Silurian Valley Ecoregion Subarea III.18-31
III.18-5 Recreation Lands in the Owens River Valley Ecoregion Subarea III.18-33
III.18-6 Recreation Lands in the Panamint Death Valley Ecoregion Subarea III.18-35
III.18-7 Recreation Lands in the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.18-37
III.18-8 Recreation Lands in the Piute Valley and Sacramento Mountains Ecoregion Subarea III.18-39
III.18-9 Recreation Lands in the Providence and Bullion Mountains Ecoregion Subarea III.18-41
III.18-10 Recreation Lands in the West Mojave and Eastern Slopes Ecoregion Subarea III.18-43

TABLE OF CONTENTS (CONTINUED)

Page No.

III.20-1 Scenic Quality Rating III.20-15
III.20-2 Visual Sensitivity Levels III.20-17
III.20-3 Visual Distance Zones III.20-19
III.20-4 Visual Resource Inventory Classes III.20-21
III.20-5 Assigned Visual Resource Management Classes III.20-23
III.20-6 National Parks, Preserves, Forests, Trails, and Scenic Byways III.20-25
III.20-7 State Parks and Scenic Highways III.20-29
III.22-1 Formerly Used Defense Sites (FUDS) III.22-9
III.22-2 Airports in the Plan Area III.22-11
III.22-3 Fire Protection Facilities in the Plan Area III.22-19
III.22-4 Law Enforcement Facilities in the Plan Area III.22-21
III.22-5 Landfills in the Plan Area III.22-27
III.24-1 DOD Installations in the Plan Area III.24-5
III.24-2 Chocolate Mountain Aerial Gunnery Range Land Jurisdiction III.24-9
III.24-3 Military Operating Areas (MOA) and Military Training Routes (MTR) in the Plan Area III.24-11
III.24-4 Radar Sites in the Plan Area III.24-15
IV.5-1 Linear and Areal Surface Water Resources and Watersheds in the Plan Area – No Action Alternative IV.5-13
IV.5-2 Linear and Areal Surface Water Resources and Watersheds in the Plan Area – Preferred Alternative IV.5-29
IV.5-3 Linear and Areal Surface Water Resources and Watersheds in the Plan Area - Alternative 1 ..... IV.5-49
IV.5-4 Linear and Areal Surface Water Resources and Watersheds in the Plan Area – Alternative 2 ..... IV.5-59
IV.5-5 Linear and Areal Surface Water Resources and Watersheds in the Plan Area – Alternative 3 ..... IV.5-73
IV.5-6 Linear and Areal Surface Water Resources and Watersheds in the Plan Area – Alternative 4 ..... IV.5-85
IV.6-1 Planned Development Areas, Estimated Solar and Geothermal Water Use, and Overdraft GW Basins – Preferred Alternative IV.6-27
IV.6-2 Planned Development Areas, Estimated Solar and Geothermal Water Use, and Stressed GW Basins – Preferred Alternative IV.6-29
IV.6-3 Planned Development Areas, Estimated Solar and Geothermal Water Use, and Overdraft GW Basins – Alternative 1 ..... IV.6-51
IV.6-4 Planned Development Areas, Estimated Solar and Geothermal Water Use, and Stressed GW Basins – Alternative 1 ..... IV.6-53

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.6-5 Planned Development Areas, Estimated Solar and Geothermal Water Use, and Overdraft GW Basins – Alternative 2 ..... IV.6-65
IV.6-6 Planned Development Areas, Estimated Solar and Geothermal Water Use, and Stressed GW Basins – Alternative 2 ..... IV.6-67
IV.6-7 Planned Development Areas, Estimated Solar and Geothermal Water Use, and Overdraft GW Basins – Alternative 3 ..... IV.6-79
IV.6-8 Planned Development Areas, Estimated Solar and Geothermal Water Use, and Stressed GW Basins – Alternative 3 ..... IV.6-81
IV.6-9 Planned Development Areas, Estimated Solar and Geothermal Water Use, and Overdraft GW Basins – Alternative 4 ..... IV.6-95
IV.6-10 Planned Development Areas, Estimated Solar and Geothermal Water Use, and Stressed GW Basins – Alternative 4 ..... IV.6-97
IV.7-1 Subunits IV.7-7
IV.8-1 Estimated Number of Cultural Resources within ADA by Ecoregion Subarea – No Action Alternative IV.8-13
IV.8-2 Estimated Number of Cultural Resources within DFAs by Ecoregion Subarea – Preferred Alternative IV.8-33
IV.8-3 Estimated Number of Cultural Resources within DFAs by Ecoregion Subarea – Alternative 1 ..... IV.8-57
IV.8-4 Estimated Number of Cultural Resources within DFAs by Ecoregion Subarea – Alternative 2 ..... IV.8-71
IV.8-5 Estimated Number of Cultural Resources within DFAs by Ecoregion Subarea – Alternative 3 ..... IV.8-85
IV.8-6 Estimated Number of Cultural Resources within DFAs by Ecoregion Subarea – Alternative 4 ..... IV.8-99
IV.9-1 Native American Element (Identified in the 1980 CDCA Plan), No Action Alternative IV.9-13
IV.9-2 Native American Element (Identified in the 1980 CDCA Plan), Preferred Alternative IV.9-25
IV.9-3 Native American Element (Identified in the 1980 CDCA Plan), Alternative 1 ..... IV.9-49
IV.9-4 Native American Element (Identified in the 1980 CDCA Plan), Alternative 2 ..... IV.9-65
IV.9-5 Native American Element (Identified in the 1980 CDCA Plan), Alternative 3 ..... IV.9-79
IV.9-6 Native American Element (Identified in the 1980 CDCA Plan), Alternative 4 ..... IV.9-95
IV.12-1 Important Farmland in Available Development Areas - No Action IV.12-43
IV.12-2 Important Farmland within DFAs - Preferred Alternative IV.12-45

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.12-3 Important Farmland within DFAs - Alternative 1 ..... IV.12-47
IV.12-4 Important Farmland within DFAs - Alternative 2 ..... IV.12-49
IV.12-5 Important Farmland within DFAs - Alternative 3 ..... IV.12-51
IV.12-6 Important Farmland within DFAs - Alternative 4 ..... IV.12-53
IV.16-1 Grazing Land within Available Development Areas – No Action Alternative IV.16-11
IV.16-2 Grazing Land within DFAs – Preferred Alternative IV.16-21
IV.16-3 Grazing Lands within DFAs – Alternative 1 ..... IV.16-31
IV.16-4 Grazing Lands within DFAs – Alternative 2 ..... IV.16-39
IV.16-5 Grazing Lands within DFAs – Alternative 3 ..... IV.16-49
IV.16-6 Grazing Lands within DFAs – Alternative 4 ..... IV.16-57
IV.17-1 HMAs and Herd Areas within Available Development Areas – No Action IV.17-9
IV.17-2 HMAs and Herd Areas within Development Focus Areas – Preferred Alternative IV.17-15
IV.17-3 HMAs and Herd Areas within Development Focus Areas – Alternative 2 ..... IV.17-27
IV.17-4 HMAs and Herd Areas within Development Focus Areas – Alternative 2 ..... IV.17-35
IV.17-5 HMAs and Herd Areas within Development Focus Areas – Alternative 3 ..... IV.17-43
IV.17-6 HMAs and Herd Areas within Development Focus Areas – Alternative 4 ..... IV.17-53
IV.18-1 BLM Recreation Classifications – No Action Alternative IV.18-15
IV.18-2 BLM Recreation Classifications Subarea – Preferred Alternative IV.18-27
IV.18-3 BLM Recreation Classifications – Alternative 1 ..... IV.18-41
IV.18-4 BLM Recreation Classifications – Alternative 2 ..... IV.18-51
IV.18-5 BLM Recreation Classifications – Alternative 3 ..... IV.18-61
IV.18-6 BLM Recreation Classifications – Alternative 4 ..... IV.18-71
IV.20-1 BLM VRM Classifications, No Action Alternative IV.20-15
IV.20-2 Proposed BLM VRM Classifications, Preferred Alternative IV.20-39
IV.20-3 Proposed BLM VRM Classifications, Alternative 1 ..... IV.20-61
IV.20-4 Proposed BLM VRM Classifications, Alternative 2 ..... IV.20-77
IV.20-5 Proposed BLM VRM Classifications, Alternative 3 ..... IV.20-95
IV.20-6 Proposed BLM VRM Classifications, Alternative 4 ..... IV.20-113
IV.24-1 Military Training Routes, Military Operations Areas, Restricted Airspace, and Military Shared Use Areas Within Available Development Areas – No Action Alternative IV.24-7

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.24-2 Military Training Routes, Military Operations Areas, Restricted Airspace, and Military Shared Use Areas Within Development Focus Areas – Preferred Alternative IV.24-13
IV.24-3 Military Training Routes, Military Operations Areas, Restricted Airspace, and Military Shared Use Areas Within Development Focus Areas – Alternative 1 ..... IV.24-23
IV.24-4 Military Training Routes, Military Operations Areas, Restricted Airspace, and Military Shared Use Areas Within Available Development Areas – Alternative 2 ..... IV.24-31
IV.24-5 Military Training Routes, Military Operations Areas, Restricted Airspace, and Military Shared Use Areas Within Development Focus Areas – Alternative 3 ..... IV.24-39
IV.24-6 Military Training Routes, Military Operations Areas, Restricted Airspace, and Military Shared Use Areas Within Development Focus Areas – Alternative 4 ..... IV.24-47

TABLES

I.3-1 Proposed Covered Species List I.3-13
I.3-2 Covered Species List Revisions Since 2013 ..... I.3-15
I.3-3 Natural Communities List I.3-16
I.3-4 Acreage Requirements per Megawatt of Generation Capacity I.3-52
II.2-1 No Action Alternative II.2-3
II.2-2a Conservation under the No Action Alternative by County II.2-7
II.2-2b Conservation under the No Action Alternative by Ownership Class II.2-8
II.2-2c Conservation under the No Action Alternative by Ecoregion Subarea II.2-8
II.2-3 No Action Alternative – Existing Resource Management Planning Documents II.2-10
II.2-4a Areas Available for Potential Development under the No Action Alternative by Technology Type and by County II.2-14
II.2-4b Areas Available for Potential Development under the No Action Alternative by Ownership II.2-16
II.2-5 Summary of Anticipated Long-Term Disturbance and Project Area Acreage for All Renewable Generation Technologies under No Action II.2-16
II.2-6 Distribution of Long-Term Disturbance and Project Area Acreages Associated with Solar and Distributed Generation Across DRECP Ecoregion Subareas Under the No Action Alternative II.2-18

TABLE OF CONTENTS (CONTINUED)

Page No.

II.2-7	Potential Distribution of Long-Term Disturbance, Rotor Swept Area, and Project Area Acreages Associated with Wind Generation Across DRECP Ecoregion Subareas Under the No Action Alternative	II.2-19
II.2-8	Potential Distribution of Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation Across DRECP Ecoregion Subareas Under the No Action Alternative	II.2-21
II.2-9	Right-of-Way Requirements for Transmission Associated with Renewable Energy Development in the No Action Alternative	II.2-23
II.2-10	Right-of-Way Requirements for Transmission Outside the DRECP Plan Area Associated with Renewable Energy Development – No Action	II.2-24
II.2-11	Management Areas for Fish and Wildlife (Table Updated February 1999)	II.2-36
II.2-12	Existing Multiple Use Classes in the CDCA as Amended (acreage includes major amendments listed below)	II.2-59
II.2-13	Visual Resource Management Classes within Imperial Sand Dunes Planning Area	II.2-97
II.3-1	Interagency DRECP Plan-Wide Preferred Alternative	II.3-9
II.3-2	Proposed Covered Species List	II.3-12
II.3-3	Preferred Alternative Reserve Design Envelope by County	II.3-15
II.3-4	Preferred Alternative Reserve Design Envelope by Ownership Class	II.3-16
II.3-5	Preferred Alternative Reserve Design Envelope by Ecoregion Subarea	II.3-16
II.3-6	Riparian and Wetland Avoidance and Setbacks	II.3-48
II.3-7	Agriculture Covered Species Survey Requirements	II.3-56
II.3-8	Agriculture Covered Species Setbacks	II.3-57
II.3-9	Plant Covered Species Suitable Habitat Disturbance Caps	II.3-60
II.3-10	Individual Species Survey Requirements	II.3-61
II.3-11	Individual Species Setback Requirements	II.3-62
II.3-12	Desert Tortoise Ground Disturbance Caps in the BLM LUPA Conservation Designations	II.3-74
II.3-13	Compensation Ratios for the Impacts[1] of DRECP Covered Activities in the DFAs	II.3-87
II.3-14	Compensation Ratios for the Impacts of Transmission Covered Activities in the Plan-wide Reserve Design Envelope	II.3-87
II.3-15	Relationship of MAMP to Other Parts of the DRECP	II.3-90
II.3-16	Effectiveness Monitoring Framework Elements and Phasing	II.3-104
II.3-17	Covered Species Effectiveness Monitoring Approach and Considerations	II.3-111

TABLE OF CONTENTS (CONTINUED)

Page No.

II.3-18	Preferred Alternative Development Focus Areas by Ecoregion Subarea and Subunit	II.3-162
II.3-19a	Preferred Alternative Development Focus Areas by County by Technology Type	II.3-165
II.3-19b	Preferred Alternative Development Focus Areas by Ownership Class	II.3-166
II.3-20	Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies	II.3-167
II.3-21	Description of Activities Associated with Solar Energy Generation	II.3-171
II.3-22	Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Preferred Alternative	II.3-178
II.3-23	Description of Activities Associated with Wind Energy Generation	II.3-179
II.3-24	Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subarea – Preferred Alternative	II.3-187
II.3-25	Description of Activities Associated with Geothermal Energy Generation	II.3-189
II.3-26	Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Preferred Alternative	II.3-194
II.3-27	Typical ROW Widths and Linear Impacts of Bulk Transmission	II.3-196
II.3-28	Typical Substation Size	II.3-197
II.3-29	Description of Activities Associated with Transmission, Substations, and Generator Tie Lines	II.3-197
II.3-30	ROW Requirements for Transmission Associated with the Renewable Energy Development by Ecoregion Subarea – Preferred Alternative	II.3-202
II.3-31	ROW Requirements for Transmission Outside the Plan Area Associated with Renewable Energy Development – Preferred Alternative	II.3-204
II.3-32	DRECP Covered Species for Which Take Will Be Allocated	II.3-254
II.3-33	RECP Take Allocation Ledger Template	II.3-264
II.3-34	Proportion of Acquisition and Non-Acquisition Compensation	II.3-283
II.3-35	NPV of Mitigation Acquisition Cost Estimates Using Preferred Alternative Acreage ($ Millions)	II.3-286
II.3-36	Five Year Snapshots for Per Acre Acquisition and Management Costs	II.3-286
II.3-37	Open Space—NPV of Mitigation Acquisition Cost Estimates in Mid-Case Using Preferred Alternative Acreage and Lowest Cost First Compensation Acreage Selection Criteria ($ Millions)	II.3-287

TABLE OF CONTENTS (CONTINUED)

Page No.

II.3-38	NPV of Non-Acquisition Mitigation Cost Estimates ($ Millions)	II.3-288
II.3-39	Range of Total Estimated NPV Cost for Biological Objectives Mitigation in the Preferred Alternative ($ Millions)	II.3-289
II.3-40	NPV of Mitigation Cost Estimates for Alternatives 1–4 Using Mid Case Lowest Cost First Compensation Acreage Selection Criteria ($ Millions)	II.3-289
II.3-41	Total Estimated NPV Cost per Acre Impacted	II.3-290
II.3-42	Interagency Preferred Alternative within the BLM LUPA	II.3-299
II.3-43	Preferred Alternative BLM LUPA Conservation Designations within the BLM LUPA	II.3-300
II.3-44	Preferred Alternative SRMAs and ERMAs within the BLM LUPA	II.3-303
II.3-45	DRECP Incentives for Renewable Energy Development within Development Focus Areas on BLM-Administered Land	II.3-304
II.3-46	Solar PEIS ROD Variance Land Screening Criteria with New, Updated, or Finer Scale Data and Land Use Plan Specific Screening Criteria Used to Identify DRECP Variance Lands	II.3-309
II.3-47	BLM Solar and Wind Applications with Possible Draft EIS within 60 days of DRECP Draft EIS As of July 28, 2014	II.3-312
II.3-48	Additional California BLM First-in-Line Solar Applications within a Solar Energy Zone	II.3-313
II.3-49	Livestock Utilization Limits of Key Perennial Species	II.3-389
II.3-50	CDCA Plan and DRECP Preferred Alternative Crosswalk	II.3-426
II.3-51	NCCP for the Preferred Alternative	II.3-439
II.3-52	Preferred Alternative within the GCP	II.3-445
II.4-1	Interagency DRECP Plan-Wide Alternative 1	II.4-2
II.4-2	DRECP Plan-Wide Reserve Design Envelope for Alternative 1 by County	II.4-7
II.4-3	DRECP Plan-Wide Reserve Design Envelope for Alternative 1 by Ownership Class	II.4-8
II.4-4	DRECP Plan-Wide Reserve Design Envelope for Alternative 1 by Ecoregion Subarea	II.4-9
II.4-5a	Alternative 1 Development Focus Areas by Ecoregion Subarea and Subunit	II.4-15
II.4-5b	Alternative 1 Development Focus Areas by Technology Type by County	II.4-17
II.4-5c	Alternative 1 Development Focus Areas by Ownership Class	II.4-17
II.4-6	Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies Under Alternative 1	II.4-18

TABLE OF CONTENTS (CONTINUED)

Page No.

II.4-7	Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 1	II.4-22
II.4-8	Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subarea – Alternative 1	II.4-24
II.4-9	Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Alternative 1	II.4-26
II.4-10	Right-of-Way Requirements for Transmission Associated with Renewable Energy Development by Ecoregion Subarea – Alternative 1	II.4-27
II.4-11	Right-of-Way Requirements for Transmission Outside the DRECP Plan Area Associated with Renewable Energy Development – Alternative 1	II.4-28
II.4-12	Interagency Alternative 1 Within the BLM LUPA	II.4-29
II.4-13	Alternative 1 BLM LUPA Conservation Designations Within the BLM LUPA	II.4-30
II.4-14	Alternative 1 Special Recreation Management Areas and Extensive Recreation Management Areas Within the BLM LUPA	II.4-33
II.4-15	NCCP for Alternative 1	II.4-55
II.4-16	Alternative 1 Within the GCP	II.4-56
II.5-1	Interagency DRECP Plan-Wide Alternative 2	II.5-2
II.5-2	DRECP Plan-Wide Reserve Design Envelope for Alternative 2 by County	II.5-7
II.5-3	DRECP Plan-Wide Reserve Design Envelope for Alternative 2 by Ownership Class	II.5-8
II.5-4	DRECP Plan-Wide Reserve Design Envelope for Alternative 2 by Ecoregion Subarea	II.5-9
II.5-5	Riparian and Wetland Avoidance and Setbacks	II.5-14
II.5-6	Compensation Ratios for the Impacts1 of DRECP Covered Activities in the DFAs	II.5-16
II.5-7	Compensation Ratios for the Impacts of Transmission Covered Activities in the DRECP Plan-Wide Reserve Design Envelope	II.5-17
II.5-8a	Alternative 2 Development Focus Areas by Ecoregion Subarea and Subunit	II.5-19
II.5-8b	Alternative 2 Development Focus Areas by Technology Type by County	II.5-23
II.5-8c	Alternative 2 Development Focus Areas by Ownership Class	II.5-24

TABLE OF CONTENTS (CONTINUED)

Page No.

II.5-9	Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies under Alternative 2	II.5-25
II.5-10	Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 2	II.5-26
II.5-11	Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subareas – Alternative 2	II.5-28
II.5-12	Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Alternative 2	II.5-30
II.5-13	Right-of-Way Requirements for Transmission Associated with Renewable Energy Development by Ecoregion Subarea – Alternative 2	II.5-32
II.5-14	Right-of-Way Requirements for Transmission Outside the DRECP Plan Area Associated with Renewable Energy Development – Alternative 2	II.5-33
II.5-15	Interagency Alternative 2 Within the BLM LUPA	II.5-34
II.5-16	Alternative 2 BLM LUPA Conservation Designations Within the BLM LUPA	II.5-35
II.5-17	Alternative 2 Special Recreation Management Areas and Extensive Recreation Management Areas Within the BLM LUPA	II.5-36
II.5-18	NCCP for Alternative 2	II.5-63
II.5-19	Alternative 2 Within the GCP	II.5-64
II.6-1	Interagency DRECP Plan-Wide Alternative 3	II.6-2
II.6-2	DRECP Plan-Wide Reserve Design Envelope for Alternative 3 by County	II.6-8
II.6-3	DRECP Plan-Wide Reserve Design Envelope for Alternative 3 by Ownership Class	II.6-8
II.6-4	DRECP Plan-Wide Reserve Design Envelope for Alternative 3 by Ecoregion Subarea	II.6-9
II.6-5a	Alternative 3 Development Focus Areas by Ecoregion Subarea and Subunit	II.6-17
II.6-5b	Alternative 3 Development Focus Areas by Technology Type by County	II.6-18
II.6-5c	Alternative 3 Development Focus Areas by Ownership Class	II.6-19
II.6-6	Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies Under Alternative 3	II.6-20

TABLE OF CONTENTS (CONTINUED)

Page No.

II.6-7	Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 3	II.6-21
II.6-8	Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subarea – Alternative 3	II.6-23
II.6-9	Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Alternative 3	II.6-26
II.6-10	Right-of-Way Requirements for Transmission Associated with Renewable Energy Development by Ecoregion Subarea – Alternative 3	II.6-27
II.6-11	Right-of-Way Requirements for Transmission Outside the Plan Area Associated with Renewable Energy Development – Alternative 3	II.6-28
II.6-12	Interagency Alternative 3 Within the BLM LUPA	II.6-29
II.6-13	Alternative 3 BLM LUPA Conservation Designations Within the BLM LUPA	II.6-30
II.6-14	Alternative 3 Special Recreation Management Areas and Extensive Recreation Management Areas Within the BLM LUPA	II.6-30
II.6-15	NCCP for Alternative 3	II.6-54
II.6-16	Alternative 3 within the GCP	II.6-59
II.7-1	Interagency DRECP Plan-Wide Alternative 4	II.7-2
II.7-2	DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by County	II.7-7
II.7-3	DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by Ownership Class	II.7-8
II.7-4	DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by Ecoregion Subarea	II.7-9
II.7-5a	Alternative 4 Development Focus Areas by Ecoregion Subarea and Subunit	II.7-15
II.7-5b	Alternative 4 Development Focus Areas by Technology Type by County	II.7-17
II.7-5c	Alternative 4 Development Focus Areas by Ownership Class	II.7-18
II.7-6	Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies under Alternative 4	II.7-18
II.7-7	Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 4	II.7-22

TABLE OF CONTENTS (CONTINUED)

Page No.

II.7-8	Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subarea – Alternative 4	II.7-24
II.7-9	Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Alternative 4	II.7-26
II.7-10	Right-of-Way Requirements for Transmission Associated with Renewable Energy Development by Ecoregion Subarea – Alternative 4	II.7-27
II.7-11	Right-of-Way Requirements for Transmission Outside the DRECP Plan Area Associated with the Renewable Energy Development – Alternative 4	II.7-28
II.7-12	Interagency Alternative 4 within the BLM LUPA	II.7-29
II.7-13	Alternative 4 BLM LUPA Conservation Designations within the BLM LUPA	II.7-30
II.7-14	Alternative 4 Special Recreation Management Areas and Extensive Recreation Management Areas Within the BLM LUPA	II.7-33
II.7-15	NCCP for Alternative 4	II.7-55
II.7-16	Alternative 4 within the GCP	II.7-56
II.8-1	Acreage of CEERT and LSA Alternative Included in the Retained Alternatives	II.8-13
II.8-2	Acreage of CalWEA Alternative Included in the Retained Alternatives	II.8-16
II.8-3	Acreage of BLM Land Alternative Included in the Retained Alternatives	II.8-19
II.8-4	Acreage of Private and Previously Disturbed Land Alternative Included in the Retained Alternatives	II.8-22
III.1-1	Summary of Existing Renewable Energy (RE) Projects in the Plan Area as of October 15, 2013	III.1-8
III.2-1	Attainment Periods	III.2-3
III.2-2	Ambient Air Quality Standards	III.2-4
III.2-3	Class I Areas by Ecoregion Subarea	III.2-8
III.2-4	Ambient Air Quality Summary with Respect to Federal Standards – Great Basin Valleys Air Basin	III.2-27
III.2-5	Ambient Air Quality Summary with Respect to Federal Standards – Mojave Desert Air Basin	III.2-39
III.2-6	Ambient Air Quality Summary with Respect to Federal Standards – Salton Sea Air Basin	III.2-39

TABLE OF CONTENTS (CONTINUED)

Page No.

III.2-7 Ambient Air Quality Summary with Respect to Federal Standards – San Diego Air Basin III.2-40
III.2-8 Ambient Air Quality Summary with Respect to State Standards – Great Basin Valleys Air Basin III.2-47
III.2-9 Ambient Air Quality Summary with Respect to State Standards – Mojave Desert Air Basin III.2-47
III.2-10 Ambient Air Quality Summary with Respect to State Standards – Salton Sea Air Basin III.2-48
III.2-11 Ambient Air Quality Summary with Respect to State Standards – San Diego Air Basin III.2-49
III.2-12 DRECP Ecoregion Subarea Air Basins (acres) III.2-50
III.2-13 2013 Attainment Status for the South Coast Air Basin III.2-61
III.2-14 2013 Attainment Status for the San Joaquin Valley Air Basin III.2-62
III.2-15 BLM LUPA Land Outside the Plan Area Air Basins (acres) III.2-63
III.3-1 Global Warming Potentials and Atmospheric Lifetimes (Years) III.3-7
III.3-2 2011 California GHG Inventory III.3-8
III.3-3 California Existing GHG Emission Rates from Electricity Use III.3-11
III.4-1 Soil Types and Textures within the Plan Area III.4-17
III.4-2 Largest Faults within the Plan Area III.4-45
III.4-3 Earthquakes within the Plan Area with a Magnitude 6.0 or Higher III.4-47
III.5-1 Comparison of Flood Characteristics for Alluvial Fans and Banked Rivers III.5-19
III.5-2 RWQCB Basin Plan Beneficial Uses III.5-24
III.5-3 Stream Crossings Outside of Plan Area III.5-34
III.6-1 California Department of Water Resources Basins in the DRECP III.6-8
III.6-2 California Department of Water Resources Basins in the Cadiz Valley and Chocolate Mountains Ecoregion Subarea of the DRECP III.6-67
III.6-3 California Department of Water Resources Basins in the Imperial Borrego Valley Ecoregion Subarea of the DRECP III.6-69
III.6-4 Department of Water Resources Basins in the Kingston and Funeral Mountains Ecoregion Subarea of the DRECP III.6-70
III.6-5 California Department of Water Resources Basins in the Mojave and Silurian Valley Ecoregion Subarea of the DRECP III.6-74
III.6-6 California Department of Water Resources Basins in the Owens River Valley Ecoregion Subarea of the DRECP III.6-77
III.6-7 California Department of Water Resources Basins in the Panamint Death Valley Ecoregion Subarea of the DRECP III.6-79

TABLE OF CONTENTS (CONTINUED)

Page No.

III.6-8 California Department of Water Resources Basins in the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea of the DRECP III.6-81
III.6-9 California Department of Water Resources Basins in the Piute Valley and Sacramento Mountains Ecoregion Subarea of the DRECP III.6-84
III.6-10 California Department of Water Resources Basins in the Providence and Bullion Mountains Ecoregion Subarea of the DRECP III.6-86
III.6-11 California Department of Water Resources Basins in the West Mojave and Eastern Slopes Ecoregion Subarea of the DRECP III.6-89
III.6-12 California Department of Water Resources Basins within BLM LUPA Affected Environment III.6-91
III.6-13 California Department of Water Resources Basins within NCCP Affected Environment III.6-95
III.6-14 California Department of Water Resources Basins within GCP Affected Environment III.6-98
III.6-15 Department of Water Resources Basins in BLM LUPA Affected Environment but Outside the Plan Area III.6-107
III.7-1 Landforms within the Plan Area III.7-9
III.7-2 Watersheds in the Plan Area III.7-10
III.7-3 Major Rivers in the Plan Area III.7-11
III.7-4 National Hydrology Dataset Waterbodies in the Plan Area III.7-12
III.7-5 Seeps/Springs in the Plan Area by Ecoregion Subarea III.7-12
III.7-6 Surficial Geology in the Plan Area III.7-17
III.7-7 Dunes and Sand Resources by Ecoregion Subarea III.7-18
III.7-8 Distribution of Elevation Ranges in the Plan Area III.7-22
III.7-9 Distribution of Slope Ranges in the Plan Area III.7-22
III.7-10 Distribution of Aspect in the Plan Area III.7-23
III.7-11 Summary of Natural Communities and Other Land Cover in Plan Area III.7-59
III.7-12 Natural Communities and Other Land Covers in the Cadiz Valley and Chocolate Mountains Ecoregion Subarea of the DRECP III.7-72
III.7-13 Natural Communities and Other Land Covers within the Imperial Borrego Valley Ecoregion Subarea of the DRECP III.7-74
III.7-14 Natural Communities and Other Land Covers in the Kingston and Funeral Mountains Ecoregion Subarea of the DRECP III.7-76
III.7-15 Natural Communities and Other Land Covers in the Mojave and Silurian Valley Ecoregion Subarea of the DRECP III.7-78
III.7-16 Natural Communities and Other Land Covers in the Owens River Valley Ecoregion Subarea of the DRECP III.7-81

TABLE OF CONTENTS (CONTINUED)

Page No.

III.7-17 Natural Communities and Other Land Covers in the Panamint Death Valley Ecoregion Subarea of the DRECP III.7-82
III.7-18 Natural Communities and Other Land Covers in the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea of the DRECP III.7-84
III.7-19 Natural Communities and Other Land Covers in the Piute Valley and Sacramento Mountains Ecoregion Subarea of the DRECP III.7-88
III.7-20 Natural Communities and Other Land Covers in the Providence and Bullion Mountains Ecoregion Subarea of the DRECP III.7-89
III.7-21 Natural Communities and Other Land Covers in the West Mojave and Eastern Slopes Ecoregion Subarea of the DRECP III.7-91
III.7-22 Important Bird Areas within the Plan Area III.7-108
III.7-23 Important Bird Areas within the Cadiz Valley and Chocolate Mountains Ecoregion Subarea of the DRECP III.7-109
III.7-24 Important Bird Areas within the Imperial Borrego Valley Ecoregion Subarea of the DRECP III.7-109
III.7-25 Important Bird Areas within the Kingston and Funeral Mountains Ecoregion Subarea of the DRECP III.7-110
III.7-26 Important Bird Areas within the Mojave and Silurian Valley Ecoregion Subarea of the DRECP III.7-110
III.7-27 Important Bird Areas within the Owens River Valley Ecoregion Subarea of the DRECP III.7-110
III.7-28 Important Bird Areas within the Panamint Death Valley Ecoregion Subarea of the DRECP III.7-111
III.7-29 Important Bird Areas within the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea of the DRECP III.7-111
III.7-30 Important Bird Areas within the Piute Valley and Sacramento Mountains Ecoregion Subarea of the DRECP III.7-112
III.7-31 Important Bird Areas within the Providence and Bullion Mountains Ecoregion Subarea of the DRECP III.7-112
III.7-32 Important Bird Areas within the West Mojave and Eastern Slopes Ecoregion Subarea of the DRECP III.7-117
III.7-33 DRECP Proposed Covered and Planning Species III.7-125
III.7-34 Desert Tortoise Recovery Units in the Plan Area III.7-127
III.7-35 Mohave Ground Squirrel Important Areas in the Plan Area III.7-166
III.7-36 Covered Species Occurring within the Cadiz Valley and Chocolate Mountains Ecoregion Subarea of the DRECP III.7-173

TABLE OF CONTENTS (CONTINUED)

Page No.

III.7-37 Covered Species Occurring within the Imperial Borrego Valley Ecoregion Subarea of the DRECP III.7-174
III.7-38 Covered Species Occurring within the Kingston and Funeral Mountains Ecoregion Subarea of the DRECP III.7-175
III.7-39 Covered Species Occurring within the Mojave and Silurian Valley Ecoregion Subarea of the DRECP III.7-176
III.7-40 Covered Species Occurring within the Owens River Valley Ecoregion Subarea of the DRECP III.7-177
III.7-41 Covered Species Occurring within the Panamint Death Valley Ecoregion Subarea of the DRECP III.7-178
III.7-42 Covered Species Occurring within the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea of the DRECP III.7-178
III.7-43 Covered Species Occurring within the Piute Valley and Sacramento Mountains Ecoregion Subarea of the DRECP III.7-180
III.7-44 Covered Species Occurring within the Providence and Bullion Mountains Ecoregion Subarea of the DRECP III.7-181
III.7-45 Covered Species Occurring within the West Mojave and Eastern Slopes Ecoregion Subarea of the DRECP III.7-181
III.7-46 Covered and Planning Species' Modeled Habitat and Critical Habitat within the Plan Area III.7-183
III.7-47 Covered and Planning Species' Modeled Habitat within the Cadiz Valley and Chocolate Mountains Ecoregion Subarea of the DRECP III.7-185
III.7-48 Covered and Planning Species' Modeled Habitat within the Imperial Borrego Valley Ecoregion Subarea of the DRECP III.7-186
III.7-49 Covered and Planning Species' Modeled Habitat within the Kingston and Funeral Mountains Ecoregion Subarea of the DRECP III.7-188
III.7-50 Covered and Planning Species' Modeled Habitat within the Mojave and Silurian Valley Ecoregion Subarea of the DRECP III.7-189
III.7-51 Covered and Planning Species' Modeled Habitat within the Owens River Valley Ecoregion Subarea of the DRECP III.7-190
III.7-52 Covered and Planning Species' Modeled Habitat within the Panamint Death Valley Ecoregion Subarea of the DRECP III.7-191
III.7-53 Covered and Planning Species' Modeled Habitat within the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea of the DRECP III.7-192
III.7-54 Covered and Planning Species' Modeled Habitat within the Piute Valley and Sacramento Mountains Ecoregion Subarea of the DRECP III.7-194

TABLE OF CONTENTS (CONTINUED)

Page No.

III.7-55 Covered and Planning Species' Modeled Habitat within the Providence and Bullion Mountains Ecoregion Subarea of the DRECP III.7-195
III.7-56 Covered and Planning Species' Modeled Habitat within the West Mojave and Eastern Slopes Ecoregion Subarea of the DRECP III.7-196
III.7-57 Special-Status Species Addressed but Not Covered by the DRECP III.7-198
III.7-58 Designated Critical Habitat Within the DRECP Plan-Wide Area for Non-Covered Species III.7-225
III.7-59 Non-Covered Species Within the Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.7-226
III.7-60 Non-Covered Species Within the Imperial Borrego Valley Ecoregion Subarea III.7-227
III.7-61 Non-Covered Species Within the Kingston and Funeral Mountains Ecoregion Subarea III.7-229
III.7-62 Non-Covered Species Within the Mojave and Silurian Valley Ecoregion Subarea III.7-231
III.7-63 Non-Covered Species Within the Owens River Valley Ecoregion Subarea III.7-233
III.7-64 Non-Covered Species Within the Panamint Death Valley Ecoregion Subarea III.7-234
III.7-65 Non-Covered Species Within the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.7-235
III.7-66 Non-Covered Species Within the Piute Valley and Sacramento Mountains Ecoregion Subarea III.7-237
III.7-67 Non-Covered Species Within the Providence and Bullion Mountains Ecoregion Subarea III.7-238
III.7-68 Non-Covered Species Within the West Mojave and Eastern Slopes Ecoregion Subarea III.7-240
III.7-69 Acreage of Landscape Habitat Linkages within the Plan Area by Ecoregion Subarea III.7-248
III.7-70 Landforms within the BLM LUPA in the Plan Area III.7-272
III.7-71 National Hydrography Dataset Waterbodies within the BLM LUPA in the Plan Area III.7-273
III.7-72 Seeps/Springs within the BLM LUPA in the Plan Area III.7-273
III.7-73 Major Rivers within the BLM LUPA in the Plan Area III.7-273
III.7-74 Surficial Geology within the BLM LUPA in the Plan Area III.7-274
III.7-75 Dunes and Sand Resources by Ecoregion Subarea within the BLM LUPA in the Plan Area III.7-274

TABLE OF CONTENTS (CONTINUED)

Page No.

III.7-76 Distribution of Elevation Ranges in the BLM LUPA III.7-275
III.7-77 Distribution of Slope Ranges in the BLM LUPA III.7-275
III.7-78 Distribution of Aspect in the BLM LUPA III.7-276
III.7-79 Summary of Natural Communities and Other Land Cover in the BLM LUPA III.7-276
III.7-80 Covered Species with Occurrences within the BLM LUPA in the Plan Area III.7-282
III.7-81 Covered and Planning Species' Modeled Habitat within BLM LUPA III.7-283
III.7-82 Acreage of Landscape Habitat Linkages within the BLM LUPA by Ecoregion Subarea III.7-285
III.7-83 Designated Critical Habitat Within the BLM LUPA Lands for Non-Covered Species III.7-286
III.7-84 Landforms within the GCP in the Plan Area III.7-287
III.7-85 National Hydrology Dataset Waterbodies within the GCP in the Plan Area III.7-288
III.7-86 Seeps/Springs within the GCP in the Plan Area III.7-288
III.7-87 Major Rivers within GCP in the Plan Area III.7-288
III.7-88 Surficial Geology within the GCP in the Plan Area III.7-289
III.7-89 Dunes and Sand Resources by Ecoregion Subarea in the GCP III.7-289
III.7-90 Distribution of Elevation Ranges in the GCP III.7-290
III.7-91 Distribution of Slope Ranges in the GCP III.7-290
III.7-92 Distribution of Aspect in the GCP III.7-291
III.7-93 Summary of Natural Communities and Other Land Cover in the GCP III.7-292
III.7-94 Covered Species with Occurrences in the GCP[1] III.7-297
III.7-95 Covered and Planning Species' Modeled Habitat in the GCP III.7-299
III.7-96 Acreage of Landscape Habitat Linkages in GCP by Ecoregion Subarea III.7-301
III.7-97 Designated Critical Habitat within the GCP Plan Area for Non-Covered Species III.7-302
III.7-98 Special Management Areas and Designated Critical Habitat Outside the Plan Area – San Diego Area III.7-308
III.7-99 Special Management Areas and Designated Critical Habitat Outside the Plan Area – Los Angeles Area III.7-311
III.7-100 Special Management Areas and Designated Critical Habitat Outside the Plan Area – North Palm Springs–Riverside Area III.7-314
III.7-101 Special Management Areas and Designated Critical Habitat Outside the Plan Area – Central Valley Area III.7-317

TABLE OF CONTENTS (CONTINUED)

Page No.

III.7-102 Natural Communities Outside of the Plan Area within BLM LUPA Lands III.7-318
III.7-103 Special-Status Species Outside of the Plan Area on BLM LUPA Lands III.7-319
III.7-104 Critical Habitat for Special-Status Species Within BLM LUPA Lands Outside the Plan Area III.7-326
III.8-1 Cultural Resources ACECs Within the Plan Area III.8-70
III.8-2 Sample of Sites From the CDCA Plan III.8-72
III.8-3 Cultural Resources of the BLM LUPA Affected Environment (All Ecoregion Subareas) III.8-83
III.8-4 Cultural Resources of the GCP Affected Environment (All Ecoregion Subareas) III.8-84
III.8-5 Ethnographic Groups in the San Diego Area III.8-86
III.8-6 Cultural Resource Types in the San Diego Transmission Corridor Area III.8-88
III.8-7 Typical Right-of-Way (ROW) Widths and Linear Impacts of Bulk Transmission to San Diego Area Cultural Resources III.8-88
III.8-8 Impacts of Substation Construction to Cultural Resources in the San Diego Area III.8-88
III.8-9 Ethnographic Groups in the Los Angeles Area III.8-90
III.8-10 Cultural Resources Types in the Los Angeles Transmission Corridor Area III.8-91
III.8-11 Typical ROW Widths and Linear Impacts of Bulk Transmission to Los Angeles Area Cultural Resources III.8-92
III.8-12 Impacts of Substation Construction to Cultural Resources in the Los Angeles Area III.8-92
III.8-13 Ethnographic Groups in the Central Valley Area III.8-94
III.8-14 Cultural Resources Types in the Central Valley Transmission Corridor Area III.8-95
III.8-15 Typical ROW Widths and Linear Impacts of Bulk Transmission to Central Valley Area Cultural Resources III.8-95
III.8-16 Impacts of Substation Construction to Cultural Resources in the Central Valley Area III.8-96
III.8-17 Ethnographic Groups in the North Palm Springs–Riverside Area III.8-97
III.8-18 Cultural Resources Types in the North Palm Springs–Riverside Transmission Corridor Area III.8-99
III.8-19 Typical ROW Widths and Linear Impacts of Bulk Transmission to North Palm Springs–Riverside Area Cultural Resources III.8-99

TABLE OF CONTENTS (CONTINUED)

Page No.

III.8-20 Impacts of Substation Construction to Cultural Resources in the North Palm Springs–Riverside Area III.8-100
III.8-21 Cultural Resources of the BLM LUPA Outside of Plan Area Affected Environment III.8-100
III.9-1 Tribes with Traditional Ties to Plan Area III.9-14
III.10-1 Potential Fossil Yield Classification System Class Definitions (BLM) III.10-8
III.10-2 Assessment of the Paleontological Potential of Rock Units (From the Society of Vertebrate Paleontology) III.10-11
III.10-3 Generalized PFYC Acres by Ecoregion Subarea III.10-22
III.11-1 Plan Area Land Status III.11-4
III.11-2 Cadiz Valley and Chocolate Mountains Ecoregion Subarea Summary of Land Use by County (acres) III.11-26
III.11-3 Imperial Borrego Valley Ecoregion Subarea Summary of Land Use by County (acres) III.11-27
III.11-4 Kingston and Funeral Mountains Ecoregion Subarea Summary of Land Use by County (acres) III.11-28
III.11-5 Mojave and Silurian Valley Ecoregion Subarea Summary of Land Use by County (acres) III.11-29
III.11-6 Owens River Valley Ecoregion Subarea Summary of Land Use by County (acres) III.11-29
III.11-7 Panamint Death Valley Ecoregion Subarea Summary of Land Use by County (acres) III.11-30
III.11-8 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea Summary of Land Use by County (acres) III.11-31
III.11-9 Piute Valley and Sacramento Mountains Ecoregion Subarea Summary of Land Use by County (acres) III.11-32
III.11-10 Providence and Bullion Mountains Ecoregion Subarea Summary of Land Use by County (acres) III.11-33
III.11-11 West Mojave and Eastern Slopes Ecoregion Subarea Summary of Land Use by County (acres) III.11-33
III.11-12 Total Acres of BLM Ownership by Ecoregion Subarea III.11-34
III.12-1 Acres of FMMP Farmland Within the Plan Area—By County* III.12-4
III.12-2 Acres of FMMP Farmland Within the Plan Area—By Ownership* III.12-5
III.12-3 Williamson Act Lands Within the Plan Area III.12-18
III.12-4 Acres of Williamson Act Lands and FMMP Farmland Within the Cadiz Valley and Chocolate Mountains Ecoregion Subarea of the Plan Area* III.12-20

TABLE OF CONTENTS (CONTINUED)

Page No.

III.12-5 Acres of Williamson Act Lands and FMMP Farmland Within the Imperial Borrego Valley Ecoregion Subarea of the Plan Area* III.12-25
III.12-6 Acres of Williamson Act Lands and FMMP Farmland Within the Mojave And Silurian Valley Ecoregion Subarea of the Plan Area* III.12-26
III.12-7 Acres of FMMP Farmland Within the Panamint Death Valley Ecoregion Subarea of the Plan Area* III.12-27
III.12-8 Acres of Williamson Act Lands and FMMP Farmland Within the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea of the Plan Area* III.12-27
III.12-9 Acres of FMMP Farmland Within the Providence and Bullion Mountains Ecoregion Subarea of the Plan Area* III.12-28
III.12-10 Acres of Williamson Act Lands and FMMP Farmland Within the West Mojave and Eastern Slopes Ecoregion Subarea of the Plan Area* III.12-29
III.12-11 Williamson Act Contract Lands and Important Farmland Within the GCP III.12-30
III.12-12 Important Farmland Outside the Plan Area III.12-32
III.13-1 BLM Authorized Renewable Energy Rights-of-Way Within the Plan Area (By County) III.13-8
III.14-1 Designated Wilderness Acres Within the Plan Area by Ecoregion Subarea and Jurisdiction III.14-15
III.14-2 Wilderness Study Area Acres Within BLM-Administered Lands in the Plan Area by Ecoregion Subarea III.14-26
III.14-3 ACEC Acres Within BLM-Administered Lands in the Plan Area by Ecoregion Subarea III.14-31
III.14-4 Wildlife Management Area Acres Within BLM-Administered Lands in the Plan Area by Ecoregion Subarea III.14-37
III.14-5 BLM-Administered Lands Inventoried for Wilderness Characteristics in the Plan Area by Ecoregion Subarea III.14-39
III.14-6 Special Recreation Management Area Within BLM-Administered Lands in the Plan Area by Ecoregion Subarea III.14-43
III.14-7 Multiple-Use Class Acres Within BLM-Administered Lands in the DRECP by Ecoregion Subarea (acres) III.14-43
III.14-8 Designated Wilderness Areas Outside the Plan Area III.14-46
III.14-9 Wilderness Study Areas Outside the Plan Area III.14-47
III.14-10 ACECs Outside the Plan Area III.14-48
III.14-11 Multiple-Use Classes Outside of Plan Area III.14-48

TABLE OF CONTENTS (CONTINUED)

Page No.

III.14-12 BLM Special Designations, Classifications, Allocations, and Lands With Wilderness Characteristics Outside the Plan Area and Inside the CDCA Boundary (BLM-Administered Lands Only) III.14-49
III.15-1 Known Geothermal Resource Area and Lease Area Acres by Ecoregion Subarea III.15-11
III.15-2 Geothermal Plants Within the Plan Area III.15-11
III.15-3 Geothermal Prospects Within the Plan Area III.15-12
III.15-4 Acres of High Potential Minerals Within the Plan Area III.15-15
III.15-5 Existing High-Priority Mineral or Energy Locations Within the Plan Area III.15-16
III.15-6 Rare Earth Element Acres Within the Plan Area by Ecoregion Subarea III.15-20
III.15-7 Locatable, Leasable, and Mineral Material Acres Within the Plan Area by Ecoregion Subarea III.15-20
III.15-8 Mineral Resources Outside the Plan Area III.15-27
II.15-9 Mineral Resource Acres for the BLM LUPA Outside the Plan Area—Affected Environment III.15-31
III.16-1 Grazing Allotments in the Plan Area III.16-7
III.16-2 Grazing Allotments Outside the Plan Area III.16-17
III.16-3 BLM LUPA Grazing Allotments Within the CDCA Boundary but Outside the Plan Area III.16-18
III.17-1 Herd Management Areas and Herd Areas Within the DRECP by Ecoregion Subarea (BLM-Administered Lands Only) III.17-2
III.17-2 Herd Management Areas and Herd Areas Inside the CDCA Boundary but Outside the Plan Area (BLM-Administered Lands Only) III.17-9
III.18-1 BLM Special Recreation Management Areas and Other Areas with a Recreation Emphasis Within the Plan Area III.18-11
III.18-2 Off-highway Vehicle Open and Limited Areas on BLM Land Within the Plan Area III.18-14
III.18-3 California State Parks Lands Within the Plan Area III.18-17
III.18-4 County Parks and Campgrounds III.18-20
III.18-5 Acres of Lands Managed for Recreation by Management Agency and Ecoregion Subarea III.18-21
III.18-6 Acres of Recreation Lands Under the General Conservation Plan by Management Agency III.18-24
III.18-7 Outdoor Recreation Areas in Transmission Corridors Outside the Plan Area III.18-45

TABLE OF CONTENTS (CONTINUED)

Page No.

III.19-1 Transportation in the Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.19-16
III.19-2 Transportation in the Imperial Borrego Valley Ecoregion Subarea III.19-16
III.19-3 Transportation in the Kingston and Funeral Mountains Ecoregion Subarea III.19-17
III.19-4 Transportation in the Mojave and Silurian Valley Ecoregion Subarea III.19-18
III.19-5 Transportation in the Owens River Valley Ecoregion Subarea III.19-19
III.19-6 Transportation in the Panamint Death Valley Ecoregion Subarea III.19-20
III.19-7 Transportation in the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.19-20
III.19-8 Transportation in the Piute Valley and Sacramento Mountains Ecoregion Subarea III.19-21
III.19-9 Transportation in the Providence and Bullion Mountains Ecoregion Subarea III.19-22
III.19-10 Transportation in the West Mojave and Eastern Slopes Ecoregion Subarea III.19-22
III.19-11 Transportation within the CDCA Outside the Plan Area III.19-28
III.20-1 Visual Resource Inventory Classification Matrix III.20-2
III.20-2 Visual Resource Management Objectives by Class III.20-3
III.20-3 Summary of Visual Resources and Visually Important Management Units within the Plan Area (All Ecoregion Subareas) III.20-12
III.20-4 Visual Resources and Visually Important Management Units: Cadiz Valley and Chocolate Mountain Ecoregion Subarea III.20-32
III.20-5 Visual Resources and Visually Important Management Units: Imperial and Borrego Valley Ecoregion Subarea III.20-33
III.20-6 Visual Resources and Visually Important Management Units: Kingston and Funeral Mountains Ecoregion Subarea III.20-34
III.20-7 Visual Resources and Visually Important Management Units: Mojave and Silurian Valley Ecoregion Subarea III.20-35
III.20-8 Visual Resources and Visually Important Management Units: Owens River Valley Ecoregion Subarea III.20-35
III.20-9 Visual Resources and Visually Important Management Units: Panamint Death Valley Ecoregion Subarea III.20-36
III.20-10 Visual Resources and Visually Important Management Units: Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.20-37
III.20-11 Visual Resources and Visually Important Management Units: Piute Valley and Sacramento Mountains Ecoregion Subarea III.20-38

TABLE OF CONTENTS (CONTINUED)

Page No.

III.20-12 Visual Resources and Visually Important Management Units: Providence and Bullion Mountains Ecoregion Subarea III.20-39
III.20-13 Visual Resources and Visually Important Management Units: West Mojave and Eastern Slopes Ecoregion Subarea III.20-39
III.20-14 Visual Resources and Visually Important Management Units of the BLM LUPA Affected Environment (All Ecoregion Subareas) III.20-41
III.20-15 Visual Resources and Visually Important Management Units of the BLM LUPA Affected Environment Outside the Plan Area (All Ecoregion Subareas) III.20-48
III.21-1 Typical Noise Levels in A-Weighted Decibel Scale III.21-12
III.21-2 DRECP Proposed Covered Species III.21-15
III.21-3 Typical Noise Levels in A-Weighted Decibel Scale III.21-17
III.22-1 RCRA and CERCLA Hazardous Contamination Sites in Plan Area III.22-7
III.22-2 RCRA and CERCLA Hazardous Sites by Ecoregion Subarea III.22-30
III.23-1 2013 Population Profile and Projections for the Plan Area III.23-10
III.23-2 2013 Housing Profile of the Plan Area Regional and Local Study Areas III.23-11
III.23-3 Employment Profile of the Plan Area Regional Study Areas III.23-14
III.23-4 Fiscal Year 2011–2012 Municipal Budgets for Local Governments Within the Plan Area III.23-18
III.23-5 U.S. Census 2008-2012 ACS1 Environmental Justice Demographics for California and Regional Study Areas III.23-21
III.23-6 Population Profile and Projections for the Transmission Out of Plan Areas III.23-28
III.23-7 Year 2013 Housing Profile of the Transmission Out of Plan Areas III.23-28
III.23-8 U.S. Census 2008-2012 ACS1 Environmental Justice Demographics of the Transmission Out of Plan Areas III.23-29
III.24-1 DOD Land and Airspace Within the Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.24-14
III.24-2 DOD Land and Airspace Within the Imperial Borrego Valley Ecoregion Subarea III.24-14
III.24-3 DOD Land and Airspace Within the Kingston and Funeral Mountains Ecoregion Subarea III.24-17
III.24-4 DOD Land and Airspace Within the Mojave and Silurian Valley Ecoregion Subarea III.24-17
III.24-5 DOD Land and Airspace Within the Owens River Valley Ecoregion Subarea III.24-18

TABLE OF CONTENTS (CONTINUED)

Page No.

III.24-6 DOD Land and Airspace Within the Panamint Death Valley Ecoregion Subarea III.24-18
III.24-7 DOD Land and Airspace Within the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.24-19
III.24-8 DOD Land and Airspace Within the Piute Valley and Sacramento Mountains Ecoregion Subarea III.24-19
III.24-9 DOD Land and Airspace Within the Providence and Bullion Mountains Ecoregion Subarea III.24-20
III.24-10 DOD Land and Airspace Within the West Mojave and Eastern Slopes Ecoregion Subarea III.24-20
III.24-11 DOD Land and Airspace on BLM Lands Within the California Desert Conservation Area Boundary but Outside of Plan Area III.24-23
IV.1-1 Summary of Plan-wide Alternative Components IV.1-10
IV.1-2 Future Assessment Areas (FAAs) Defined by Alternative IV.1-12
IV.1-3 Special Analysis Areas (SAAs) Defined by Alternative IV.1-13
IV.1-4 DRECP Variance Lands Defined by Alternative IV.1-14
IV.1-5 NCCP Alternatives IV.1-22
IV.1-6 Characteristics of GCP Alternatives IV.1-23
IV.2-1 Area Designations IV.2-2
IV.2-2 Estimated Construction-Phase Emissions, No Action Alternative IV.2-9
IV.2-3 Estimated Construction-Phase Emissions, Preferred Alternative IV.2-21
IV.2-4 Estimated Construction-Phase Emissions, Alternative 1 ..... IV.2-34
IV.2-5 Estimated Construction-Phase Emissions, Alternative 2 ..... IV.2-41
IV.2-6 Estimated Construction-Phase Emissions, Alternative 3 ..... IV.2-49
IV.2-7 Estimated Construction-Phase Emissions, Alternative 4 ..... IV.2-57
IV.3-1 Estimated Loss of Annual Carbon Uptake – No Action Alternative IV.3-8
IV.3-2 Annual GHG Emissions Reductions – No Action Alternative IV.3-10
IV.3-3 Estimated Loss of Annual Carbon Uptake – Preferred Alternative IV.3-16
IV.3-4 Annual GHG Emissions Reductions – Preferred Alternative IV.3-17
IV.3-5 Estimated Loss of Annual Carbon Uptake – Alternative 1 ..... IV.3-24
IV.3-6 Annual GHG Emissions Reductions – Alternative 1 ..... IV.3-25
IV.3-7 Estimated Loss of Annual Carbon Uptake – Alternative 2 ..... IV.3-31
IV.3-8 Annual GHG Emissions Reductions – Alternative 2 ..... IV.3-32
IV.3-9 Estimated Loss of Annual Carbon Uptake – Alternative 3 ..... IV.3-38
IV.3-10 Annual GHG Emissions Reductions – Alternative 3 ..... IV.3-39
IV.3-11 Estimated Loss of Annual Carbon Uptake – Alternative 4 ..... IV.3-45
IV.3-12 Annual GHG Emissions Reductions – Alternative 4 ..... IV.3-46

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.4-1 Faults Within a 25-Mile Radius of Developable Areas in the No Action Alternative IV.4-10
IV.4-2 Faults Within a 25-Mile Radius of DFAs in the Preferred Alternative IV.4-23
IV.4-3 Comparison of Preferred Alternative With No Action Alternative IV.4-36
IV.4-4 Faults Within a 25-Mile Radius of DFAs in Alternative 1 ..... IV.4-39
IV.4-5 Comparison of Alternative 1 With the Preferred Alternative IV.4-45
IV.4-6 Faults Within a 25-Mile Radius of DFAs in Alternative 2 ..... IV.4-48
IV.4-7 Comparison of Alternative 2 With the Preferred Alternative IV.4-55
IV.4-8 Faults Within a 25-Mile Radius of DFAs in Alternative 3 ..... IV.4-57
IV.4-9 Comparison of Alternative 3 With the Preferred Alternative IV.4-64
IV.4-10 Faults Within a 25-Mile Radius of DFAs in Alternative 4 ..... IV.4-66
IV.4-11 Comparison of Alternative 4 With the Preferred Alternative IV.4-73
IV.5-1 CEQA Standards of Significance IV.5-4
IV.5-2 Development that Could Occur Within Plan Area Mapped 100 Year Floodplains (acres) – No Action Alternative IV.5-17
IV.5-3 Existing Plan Area Mapped 100-Year Floodplain That Could Be Conserved (acres) – No Action Alternative IV.5-22
IV.5-4 Development that Could Occur Within BLM LUPA Lands Affecting Mapped 100-Year Floodplains (acres) – No Action Alternative IV.5-23
IV.5-5 Existing Mapped 100-Year Floodplain Conserved on BLM LUPA Lands (acres) – No Action Alternative IV.5-23
IV.5-6 Development that Could Occur Within Plan Area Mapped 100-Year Floodplains (acres) – Preferred Alternative IV.5-28
IV.5-7 Existing and Additional Mapped 100-Year Floodplain Conserved from Reserve Design (acres) – Preferred Alternative IV.5-39
IV.5-8 Development that Could Occur Within the DFA of BLM LUPA Lands Affecting Mapped 100-Year Floodplains (acres) – Preferred Alternative IV.5-40
IV.5-9 Mapped 100-Year Floodplain Conserved on Existing and Proposed BLM LUPA Lands (acres) – Preferred Alternative IV.5-41
IV.5-10 Development that Could Occur Within Plan Area - Mapped 100-Year Floodplains (acres) – Alternative 1 ..... IV.5-47
IV.5-11 Existing and Additional Mapped 100-Year Floodplain Conserved from Reserve Design (acres) – Alternative 1 ..... IV.5-52
IV.5-12 Mapped 100-Year Floodplain Within the BLM LUPA Area that Could be Developed (acres) – Alternative 1 ..... IV.5-53

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.5-13 Existing and Proposed Mapped 100-Year Floodplain Conserved on BLM LUPA Lands (acres) – Alternative 1 ..... IV.5-54
IV.5-14 Development that Could Occur Within Mapped 100-Year DFA Floodplains (acres) – Alternative 2 ..... IV.5-61
IV.5-15 Existing and Additional Mapped 100-Year Floodplain Conserved from Reserve Design (acres) – Alternative 2 ..... IV.5-65
IV.5-16 Mapped 100-Year Floodplain Within the BLM LUPA DFA Area that Could be Developed – Alternative 2 ..... IV.5-66
IV.5-17 Existing and Proposed Mapped 100-Year Floodplain Conserved on BLM LUPA Lands (acres) – Alternative 2 ..... IV.5-66
IV.5-18 Development that Could Occur Within Mapped 100-Year DFA Floodplains (acres) – Alternative 3 ..... IV.5-72
IV.5-19 Existing and Additional Mapped 100-Year Floodplain Conserved from Reserve Design (acres) – Alternative 3 ..... IV.5-77
IV.5-20 Mapped 100-Year Floodplain Within the BLM LUPA DFA Area that Could be Developed (acres) – Alternative 3 ..... IV.5-78
IV.5-21 Mapped 100-Year Floodplain Conserved on Existing and Proposed BLM LUPA Lands (acres) – Alternative 3 ..... IV.5-79
IV.5-22 Development that Could Occur Within Mapped 100-Year Plan Area Floodplains (acres) – Alternative 4 ..... IV.5-87
IV.5-23 Existing and Additional Mapped 100-Year Floodplain Conserved from Reserve Design (acres) – Alternative 4 ..... IV.5-90
IV.5-24 Mapped 100-Year Floodplain Within the BLM LUPA DFA Area that could be Developed (acres) – Alternative 4 ..... IV.5-91
IV.5-25 Mapped 100-Year Floodplain Conserved on Existing and Proposed BLM LUPA Lands (acres) – Alternative 4 ..... IV.5-92
IV.6-1 Renewable Energy Development Area and Estimated Water Use – No Action Alternative IV.6-11
IV.6-2 Renewable Energy Development Area and Estimated Water Use – Preferred Alternative IV.6-25
IV.6-3 Renewable Energy Development Area and Estimated Water Use – Alternative 1 ..... IV.6-49
IV.6-4 Renewable Energy Development Area and Estimated Water Use – Alternative 2 ..... IV.6-63
IV.6-5 Renewable Energy Development Area and Estimated Water Use – Alternative 3 ..... IV.6-78

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.6-6 Renewable Energy Development Area and Estimated Water Use – Alternative 4 ..... IV.6-92
IV.7-1 List of Fire Resilient and Non-Resilient Natural Communities IV.7-18
IV.7-2 Plan-Wide Impact Analysis for Natural Communities – No Action Alternative IV.7-55
IV.7-3 Plan-Wide Impact Analysis for Species Habitat – No Action Alternative IV.7-64
IV.7-4 Plan-Wide Impact Analysis for Desert Tortoise – No Action Alternative IV.7-66
IV.7-5 Plan-Wide Impact Analysis for Mohave Ground Squirrel – No Action Alternative IV.7-68
IV.7-6 Cross-Reference Between Natural Communities for Primary Associated Non-Covered and Covered Species IV.7-72
IV.7-7 Plan-Wide Impact Analysis for Natural Communities and Associated Non-Covered Species – No Action Alternative IV.7-78
IV.7-8 Plan-Wide Impact Analysis for the Desert Linkage Network – No Action Alternative IV.7-85
IV.7-9 Plan-Wide Impact Analysis for Estimated Range of Collisions per Year for Birds and Bats by Subarea – No Action Alternative IV.7-92
IV.7-10 Plan-Wide Estimated Total Take for Covered Avian and Bat Species – No Action Alternative IV.7-94
IV.7-11 Plan-Wide Conservation Analysis for the Desert Linkage Network – No Action Alternative IV.7-97
IV.7-12 Plan-Wide Conservation Analysis for Natural Communities – No Action Alternative IV.7-104
IV.7-13 Plan-wide Conservation Analysis for Species Habitat – No Action Alternative IV.7-108
IV.7-14 Plan-Wide Conservation Analysis for Desert Tortoise – No Action Alternative IV.7-110
IV.7-15 Plan-Wide Conservation Analysis for Mohave Ground Squirrel – No Action Alternative IV.7-111
IV.7-16 Plan-Wide Conservation Analysis for Critical Habitat Within Existing BLM Land Use Plans for Non-Covered Species – No Action Alternative IV.7-112
IV.7-17 Impact Analysis for Natural Communities Within Existing BLM Land Use Plans – No Action Alternative IV.7-116
IV.7-18 Impact Analysis for Species Habitat within Existing BLM Land Use Plans – No Action Alternative IV.7-123
IV.7-19 Impact Analysis for Desert Tortoise Important Areas within Existing BLM Land Use Plans – No Action Alternative IV.7-126

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-20 Impact Analysis for Mohave Ground Squirrel Important Areas within Existing BLM Land Use Plans – No Action Alternative IV.7-127
IV.7-21 BLM LUPA Impact Analysis for Natural Communities and Associated Non-Covered Species –No Action Alternative IV.7-131
IV.7-22 Impact Analysis for the Desert Linkage Network Within Existing BLM Land Use Plans – No Action Alternative IV.7-138
IV.7-23 BLM LUPA Impact Analysis for Estimated Range of Collisions per Year for Birds and Bats by Subarea – No Action Alternative IV.7-142
IV.7-24 BLM LUPA Estimated Total Take for Covered Avian and Bat Species – No Action Alternative IV.7-145
IV.7-25 Conservation Analysis for the Desert Linkage Network Within Existing BLM Land Use Plans - No Action Alternative IV.7-146
IV.7-26 Conservation Analysis for Natural Communities Within Existing BLM Land Use Plans – No Action Alternative IV.7-150
IV.7-27 Conservation Analysis for Species Habitat Within Existing BLM Land Use Plans – No Action Alternative IV.7-154
IV.7-28 Conservation Analysis for Desert Tortoise Important Areas Within Existing BLM Land Use Plans – No Action Alternative IV.7-157
IV.7-29 Conservation Analysis for Mohave Ground Squirrel Important Areas Within Existing BLM Land Use Plans – No Action Alternative IV.7-158
IV.7-30 Conservation Analysis for Critical Habitat within Existing BLM Land Use Plans for Non-Covered Species – No Action Alternative IV.7-159
IV.7-31 Impact Analysis for Natural Communities Within the GCP Area – No Action Alternative IV.7-162
IV.7-32 Impact Analysis for Species Habitat Within the GCP Area – No Action Alternative IV.7-170
IV.7-33 Impact Analysis for Desert Tortoise Important Areas Within the GCP Area – No Action Alternative IV.7-173
IV.7-34 Impact Analysis for Mohave Ground Squirrel Important Areas Within the GCP Area – No Action Alternative IV.7-174
IV.7-35 GCP Impact Analysis for Natural Communities and Associated Non-Covered Species – No Action Alternative IV.7-178
IV.7-36 GCP Impact Analysis for the Desert Linkage Network – No Action Alternative IV.7-185
IV.7-37 GCP Impact Analysis for the Estimated Range of Bird and Bat Collisions per Year by Subarea – No Action Alternative IV.7-189

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-38 GCP Estimated Total Take for Covered Avian and Bat Species – No Action Alternative IV.7-191
IV.7-39 Conservation Analysis for the Desert Linkage Network within the GCP Area – No Aion Alternative IV.7-193
IV.7-40 Conservation Analysis for Natural Communities Within the GCP Area – No Action Alternative IV.7-197
IV.7-41 Conservation Analysis for Species Habitat Within the GCP Area – No Action Alternative IV.7-201
IV.7-42 Conservation Analysis for Desert Tortoise Within the GCP Area – No Action Alternative IV.7-203
IV.7-43 Conservation Analysis for Mohave Ground Squirrel Within the GCP Area – No Action Alternative IV.7-204
IV.7-44 Conservation Analysis for Critical Habitat within the GCP Area for Non-Covered Species – No Action Alternative IV.7-205
IV.7-45 Plan-Wide Impact Analysis for Natural Communities – Preferred Alternative IV.7-222
IV.7-46 Plan-Wide Terrestrial Operational Impacts – Preferred Alternative IV.7-228
IV.7-47 Plan-Wide Impact Analysis for Covered Species Habitat – Preferred Alternative IV.7-236
IV.7-48 Plan-Wide Impact Analysis for Desert Tortoise Important Areas – Preferred Alternative IV.7-239
IV.7-49 Plan-Wide Impact Analysis for Mohave Ground Squirrel Important Areas – Preferred Alternative IV.7-243
IV.7-50 Cross-Reference Between Natural Communities for Primary Associated Covered Species and Non-Covered IV.7-251
IV.7-51 Plan-Wide Impact Analysis for Natural Communities and Associated Non-Covered Species – Preferred Alternative IV.7-257
IV.7-52 Plan-Wide Impact Analysis for the Desert Linkage Network – Preferred Alternative IV.7-265
IV.7-53 Plan-Wide Estimated Range of Collisions per Year for Birds and Bats by Subarea – Preferred Alternative IV.7-273
IV.7-54 Plan-wide Estimated Total Take for Covered Avian and Bat Species – Preferred Alternative IV.7-277
IV.7-55 Plan-Wide Conservation Analysis for the Desert Linkage Network – Preferred Alternative IV.7-282
IV.7-56 Plan-Wide Conservation Analysis for Natural Communities – Preferred Alternative IV.7-291

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-57 Plan-Wide Conservation Analysis for Covered Species Habitat – Preferred Alternative IV.7-297
IV.7-58 Plan-Wide Conservation Analysis for Desert Tortoise Important Areas – Preferred Alternative IV.7-302
IV.7-59 Plan-Wide Conservation Analysis for Mohave Ground Squirrel Important Areas – Preferred Alternative IV.7-303
IV.7-60 Critical Habitat Within Plan-Wide Reserve Design for Non-Covered Species – Preferred Alternative IV.7-304
IV.7-61 Critical Habitat Within Plan-Wide Reserve Design for Non-Covered Species – Preferred Alternative IV.7-306
IV.7-62 BLM LUPA Impact Analysis for Natural Communities – Preferred Alternative IV.7-310
IV.7-63 BLM LUPA Terrestrial Operational Impacts – Preferred Alternative IV.7-315
IV.7-64 BLM LUPA Impact Analysis for Covered Species Habitat – Preferred Alternative IV.7-321
IV.7-65 BLM LUPA Impact Analysis for Desert Tortoise Important Areas – Preferred Alternative IV.7-323
IV.7-66 BLM LUPA Impact Analysis for Mohave Ground Squirrel Important Areas – Preferred Alternative IV.7-325
IV.7-67 BLM LUPA Impact Analysis for Natural Communities and Associated Non-Covered Species – Preferred Alternative IV.7-330
IV.7-68 BLM LUPA Impact Analysis for the Desert Linkage Network – Preferred Alternative IV.7-337
IV.7-69 BLM LUPA Impact Analysis – Estimated Range of Bird and Bat Collisions per Year by Subarea – Preferred Alternative IV.7-342
IV.7-70 BLM LUPA Estimated Total Take for Covered Avian and Bat Species – Preferred Alternative IV.7-346
IV.7-71 BLM LUPA Conservation Analysis for the Desert Linkage Network – Preferred Alternative IV.7-348
IV.7-72 BLM LUPA Conservation Analysis for Natural Communities – Preferred Alternative IV.7-354
IV.7-73 BLM LUPA Conservation Analysis for Covered Species Habitat – Preferred Alternative IV.7-362
IV.7-74 BLM LUPA Conservation Analysis for Desert Tortoise Important Areas – Preferred Alternative IV.7-366
IV.7-75 BLM LUPA Conservation Analysis for Mohave Ground Squirrel Important Areas – Preferred Alternative IV.7-367

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-76 Critical Habitat Within BLM LUPA Conservation Designations for Non-Covered Species – Preferred Alternative IV.7-368
IV.7-77 NCCP Conservation Analysis for the Desert Linkage Network – Preferred Alternative IV.7-371
IV.7-78 NCCP Conservation Analysis for Natural Communities – Preferred Alternative IV.7-378
IV.7-79 NCCP Conservation Analysis for Covered Species Habitat – Preferred Alternative IV.7-389
IV.7-80 NCCP Conservation Analysis for Desert Tortoise Important Areas – Preferred Alternative IV.7-392
IV.7-81 NCCP Conservation Analysis for Mohave Ground Squirrel Important Areas – Preferred Alternative IV.7-393
IV.7-82 GCP Impact Analysis for Natural Communities – Preferred Alternative IV.7-397
IV.7-83 GCP Terrestrial Operational Impacts – Preferred Alternative IV.7-403
IV.7-84 GCP Impact Analysis for Covered Species Habitat – Preferred Alternative IV.7-408
IV.7-85 GCP Impact Analysis for Desert Tortoise Important Areas – Preferred Alternative IV.7-410
IV.7-86 GCP Impact Analysis for Mohave Ground Squirrel Important Areas – Preferred Alternative IV.7-412
IV.7-87 GCP Impact Analysis for Natural Communities and Associated Non-Covered Species – Preferred Alternative IV.7-417
IV.7-88 GCP Impact Analysis for the Desert Linkage Network – Preferred Alternative IV.7-424
IV.7-89 GCP Impact Analysis – Estimated Range of Bird and Bat Collisions per Year by Subarea – Preferred Alternative[1] IV.7-429
IV.7-90 GCP Estimated Total Take for Covered Avian and Bat Species – Preferred Alternative IV.7-433
IV.7-91 GCP Conservation Analysis for the Desert Linkage Network – Preferred Alternative IV.7-434
IV.7-92 GCP Conservation Analysis for Natural Communities – Preferred Alternative IV.7-440
IV.7-93 GCP Conservation Analysis for Covered Species Habitat – Preferred Alternative IV.7-447
IV.7-94 GCP Conservation Analysis for Desert Tortoise Important Areas – Preferred Alternative IV.7-451

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-95 GCP Conservation Analysis for Mohave Ground Squirrel Important Areas – Preferred Alternative IV.7-452
IV.7-96 Critical Habitat Within GCP Lands for Non-Covered Species – Preferred Alternative IV.7-454
IV.7-97 Estimated Acres of Natural Communities in BLM LUPA Outside of Plan Area – Preferred Alternative IV.7-455
IV.7-98 Special-Status Species Occurring in BLM LUPA Outside of Plan Area – Preferred Alternative IV.7-457
IV.7-99 Critical Habitat Within BLM LUPA Conservation Designations for Special-Status Species Outside the Plan Area – Preferred Alternative IV.7-463
IV.7-100 Plan-Wide Impact Analysis for Natural Communities – Alternative 1 ..... IV.7-500
IV.7-101 Plan-Wide Terrestrial Operational Impacts – Alternative 1 ..... IV.7-506
IV.7-102 Plan-Wide Impact Analysis for Covered Species Habitat – Alternative 1 ... IV.7-513
IV.7-103 Plan-Wide Impact Analysis for Desert Tortoise Important Areas – Alternative 1 ..... IV.7-516
IV.7-104 Plan-Wide Impact Analysis for Mohave Ground Squirrel Important Areas – Alternative 1 ..... IV.7-519
IV.7-105 Plan-Wide Impact Analysis for Natural Communities and Associated Non-Covered Species – Alternative 1 ..... IV.7-529
IV.7-106 Plan-Wide Impact Analysis for the Desert Linkage Network – Alternative 1 ..... IV.7-536
IV.7-107 Plan-Wide Estimated Range of Collisions per Year for Birds and Bats by Subarea – Alternative 1 ..... IV.7-543
IV.7-108 Plan-Wide Estimated Total Take for Covered Avian and Bat Species – Alternative 1 ..... IV.7-547
IV.7-109 Plan-Wide Conservation Analysis for the Desert Linkage Network – Alternative 1 ..... IV.7-553
IV.7-110 Plan-Wide Conservation Analysis for Natural Communities – Alternative 1 ..... IV.7-563
IV.7-111 Plan-Wide Conservation Analysis for Covered Species Habitat– Alternative 1 ..... IV.7-569
IV.7-112 Plan-Wide Conservation Analysis for Desert Tortoise Important Areas – Alternative 1 ..... IV.7-572
IV.7-113 Plan-Wide Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 1 ..... IV.7-574
IV.7-114 Critical Habitat within Plan-Wide Reserve Design for Non-Covered Species – Alternative 1 ..... IV.7-576

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-115 BLM LUPA Impact Analysis for Natural Communities – Alternative 1 ..... IV.7-580
IV.7-116 BLM LUPA Terrestrial Operational Impacts – Alternative 1 ..... IV.7-586
IV.7-117 BLM LUPA Impact Analysis for Covered Species Habitat – Alternative 1 ..... IV.7-591
IV.7-118 BLM LUPA Impact Analysis for Desert Tortoise Important Areas – Alternative 1 ..... IV.7-593
IV.7-119 BLM LUPA Impact Analysis for Mohave Ground Squirrel Important Areas – Alternative 1 ..... IV.7-595
IV.7-120 BLM LUPA Impact Analysis for Natural Communities and Associated Non-Covered Species – Alternative 1 ..... IV.7-599
IV.7-121 BLM LUPA Impact Analysis for the Desert Linkage Network – Alternative 1 ..... IV.7-605
IV.7-122 BLM LUPA Impact Analysis – Estimated Range of Bird and Bat Collisions per Year by Subarea – Alternative 1 ..... IV.7-610
IV.7-123 BLM LUPA Estimated Total Take for Covered Avian and Bat Species – Alternative 1 ..... IV.7-613
IV.7-124 BLM LUPA Conservation Analysis for the Desert Linkage Network – Alternative 1 ..... IV.7-616
IV.7-125 BLM LUPA Conservation Analysis for Natural Communities – Alternative 1 ..... IV.7-622
IV.7-126 BLM LUPA Conservation Analysis for Covered Species Habitat – Alternative 1 ..... IV.7-628
IV.7-127 BLM LUPA Conservation Analysis for Desert Tortoise Important Areas – Alternative 1 ..... IV.7-632
IV.7-128 BLM LUPA Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 1 ..... IV.7-633
IV.7-129 Critical Habitat Within BLM LUPA Conservation Designations for Non-Covered Species – Alternative 1 ..... IV.7-634
IV.7-130 NCCP Conservation Analysis for the Desert Linkage Network – Alternative 1 ..... IV.7-637
IV.7-131 NCCP Conservation Analysis for Natural Communities – Alternative 1 ..... IV.7-644
IV.7-132 NCCP Conservation Analysis for Covered Species Habitat – Alternative 1 ..... IV.7-652
IV.7-133 NCCP Conservation Analysis for Desert Tortoise Important Areas – Alternative 1 ..... IV.7-657
IV.7-134 NCCP Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 1 ..... IV.7-658
IV.7-135 GCP Impact Analysis for Natural Communities – Alternative 1 ..... IV.7-662
IV.7-136 GCP Terrestrial Operational Impacts – Alternative 1 ..... IV.7-668

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-137 GCP Impact Analysis for Covered Species Habitat – Alternative 1 ..... IV.7-674
IV.7-138 GCP Impact Analysis for Desert Tortoise Important Areas – Alternative 1 ..... IV.7-677
IV.7-139 GCP Impact Analysis for Mohave Ground Squirrel Important Areas – Alternative 1 ..... IV.7-678
IV.7-140 GCP Impact Analysis for Natural Communities and Associated Non-Covered Species – Alternative 1 ..... IV.7-684
IV.7-141 GCP Impact Analysis for the Desert Linkage Network – Alternative 1 ..... IV.7-691
IV.7-142 GCP Estimated Range of Bird and Bat Collisions per Year by Subarea – Alternative 1 ..... IV.7-696
IV.7-143 GCP Estimated Total Take for Covered Avian and Bat Species – Alternative 1 ..... IV.7-700
IV.7-144 GCP Conservation Analysis for the Desert Linkage Network – Alternative 1 ..... IV.7-701
IV.7-145 GCP Conservation Analysis for Natural Communities – Alternative 1 ..... IV.7-707
IV.7-146 GCP Conservation Analysis for Covered Species Habitat – Alternative 1 ... IV.7-712
IV.7-147 GCP Conservation Analysis for Desert Tortoise Important Areas – Alternative 1 ..... IV.7-715
IV.7-148 GCP Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 1 ..... IV.7-716
IV.7-149 Critical Habitat within GCP Lands for Non-Covered Species – Alternative 1 ..... IV.7-717
IV.7-150 Estimated Acres of Natural Communities in BLM LUPA Outside of Plan Area – Alternative 1 ..... IV.7-719
IV.7-151 Special-Status Species Occurring in BLM LUPA Outside of Plan Area – Alternative 1 ..... IV.7-721
IV.7-152 Critical Habitat Within BLM LUPA Conservation Designations for Special-Status Species Outside the Plan Area – Alternative 1 ..... IV.7-726
IV.7-153 Plan-Wide Impact Analysis for Natural Communities – Alternative 2 ..... IV.7-762
IV.7-154 Plan-Wide Terrestrial Operational Impacts – Alternative 2 ..... IV.7-768
IV.7-155 Plan-Wide Impact Analysis for Covered Species Habitat – Alternative 2 ... IV.7-775
IV.7-156 Plan-Wide Impact Analysis for Desert Tortoise Important Areas – Alternative 2 ..... IV.7-777
IV.7-157 Plan-Wide Impact Analysis for Mohave Ground Squirrel Important Areas – Alternative 2 ..... IV.7-782
IV.7-158 Plan-Wide Impact Analysis for Natural Communities and Associated Non-Covered Species – Alternative 2 ..... IV.7-791

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-159 Plan-Wide Impact Analysis for the Desert Linkage Network – Alternative 2 ..... IV.7-800
IV.7-160 Estimated Range of Collisions per Year Expected for Birds and Bats by Subarea – Alternative 2 ..... IV.7-808
IV.7-161 Plan-Wide Estimated Total Take for Covered Avian and Bat Species – Alternative 2 ..... IV.7-812
IV.7-162 Plan-Wide Conservation Analysis for the Desert Linkage Network – Alternative 2 ..... IV.7-818
IV.7-163 Plan-Wide Conservation Analysis for Natural Communities – Alternative 2 ..... IV.7-828
IV.7-164 Plan-Wide Conservation Analysis for Covered Species Habitat – Alternative 2 ..... IV.7-834
IV.7-165 Plan-Wide Conservation Analysis for Desert Tortoise Important Areas – Alternative 2 ..... IV.7-838
IV.7-166 Plan-Wide Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 2 ..... IV.7-839
IV.7-167 Critical Habitat Within Plan-Wide Reserve Design for Non-Covered Species – Alternative 2 ..... IV.7-840
IV.7-168 BLM LUPA Impact Analysis for Natural Communities – Alternative 2 ..... IV.7-845
IV.7-169 BLM LUPA Terrestrial Operational Impacts – Alternative 2 ..... IV.7-850
IV.7-170 BLM LUPA Impact Analysis for Covered Species Habitat – Alternative 2 ..... IV.7-856
IV.7-171 BLM LUPA Impact Analysis for Desert Tortoise Important Areas – Alternative 2 ..... IV.7-859
IV.7-172 BLM LUPA Impact Analysis for Mohave Ground Squirrel Important Areas – Alternative 2 ..... IV.7-861
IV.7-173 BLM LUPA Impact Analysis for Natural Communities and Associated Non-Covered Species – Alternative 2 ..... IV.7-866
IV.7-174 BLM LUPA Impact Analysis for the Desert Linkage Network – Alternative 2 ..... IV.7-875
IV.7-175 BLM LUPA Estimated Range of Bird and Bat Collisions per Year by Subarea – Alternative 2 ..... IV.7-880
IV.7-176 BLM LUPA Estimated Total Take for Covered Avian and Bat Species – Alternative 2 ..... IV.7-884
IV.7-177 BLM LUPA Conservation Analysis for the Desert Linkage Network – Alternative 2 ..... IV.7-887
IV.7-178 BLM LUPA Conservation Analysis for Natural Communities – Alternative 2 ..... IV.7-892

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-179 BLM LUPA Conservation Analysis for Covered Species Habitat – Alternative 2 ..... IV.7-897
IV.7-180 BLM LUPA Conservation Analysis for Desert Tortoise Important Areas – Alternative 2 ..... IV.7-900
IV.7-181 BLM LUPA Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 2 ..... IV.7-901
IV.7-182 Critical Habitat within BLM LUPA Conservation Designations for Non-Covered Species – Alternative 2 ..... IV.7-902
IV.7-183 NCCP Conservation Analysis for the Desert Linkage Network – Alternative 2 ..... IV.7-905
IV.7-184 NCCP Conservation Analysis for Natural Communities –Alternative 2 ..... IV.7-911
IV.7-185 NCCP Conservation Analysis for Covered Species Habitat –Alternative 2 ..... IV.7-918
IV.7-186 NCCP Conservation Analysis for Desert Tortoise Important Areas – Alternative 2 ..... IV.7-923
IV.7-187 NCCP Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 2 ..... IV.7-924
IV.7-188 GCP Impact Analysis for Natural Communities – Alternative 2 ..... IV.7-928
IV.7-189 GCP Terrestrial Operational Impacts – Alternative 2 ..... IV.7-934
IV.7-190 GCP Impact Analysis for Covered Species Habitat – Alternative 2 ..... IV.7-939
IV.7-191 GCP Impact Analysis for Desert Tortoise Important Areas – Alternative 2 ..... IV.7-942
IV.7-192 GCP Impact Analysis for Mohave Ground Squirrel Important Areas – Alternative 2 ..... IV.7-944
IV.7-193 GCP Impact Analysis for Natural Communities and Associated Non-Covered Species – Alternative 2 ..... IV.7-948
IV.7-194 GCP Impact Analysis for the Desert Linkage Network – Alternative 2 ..... IV.7-956
IV.7-195 GCP Estimated Range of Bird and Bat Collisions per Year by Subarea – Alternative 2 ..... IV.7-961
IV.7-196 GCP Estimated Total Take for Covered Avian and Bat Species – Alternative 2 ..... IV.7-964
IV.7-197 GCP Conservation Analysis for the Desert Linkage Network – Alternative 2 ..... IV.7-966
IV.7-198 GCP Conservation Analysis for Natural Communities – Alternative 2 ..... IV.7-971
IV.7-199 GCP Conservation Analysis for Covered Species Habitat – Alternative 2 ..... IV.7-977
IV.7-200 GCP Conservation Analysis for Desert Tortoise Important Areas – Alternative 2 ..... IV.7-980

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-201 GCP Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 2 ..... IV.7-981
IV.7-202 Critical Habitat within GCP Lands for Non-Covered Species – Alternative 2 ..... IV.7-982
IV.7-203 Estimated Acres of Natural Communities in BLM LUPA Outside of Plan Area – Alternative 2 ..... IV.7-984
IV.7-204 Special-Status Species Occurring in BLM LUPA Outside of Plan Area – Alternative 2 ..... IV.7-986
IV.7-205 Critical Habitat Within BLM LUPA Conservation Designations for Special-Status Species – Alternative 2 ..... IV.7-991
IV.7-206 Plan-Wide Impact Analysis for Natural Communities – Alternative 3 ..... IV.7-1028
IV.7-207 Plan-Wide Terrestrial Operational Impacts – Alternative 3 ..... IV.7-1033
IV.7-208 Plan-wide Impact Analysis for Covered Species Habitat – Alternative 3. IV.7-1041
IV.7-209 Plan-wide Impact Analysis for Desert Tortoise Important Areas – Alternative 3 ..... IV.7-1043
IV.7-210 Plan-wide Impact Analysis for Mohave Ground Squirrel Important Areas – Alternative 3 ..... IV.7-1047
IV.7-211 Plan-Wide Impact Analysis for Natural Communities and Associated Non-Covered Species – Alternative 3 ..... IV.7-1055
IV.7-212 Plan-Wide Impact Analysis for the Desert Linkage Network – Alternative 3 ..... IV.7-1064
IV.7-213 Plan-Wide Estimated Range of Collisions per Year for Birds and Bats by Subarea – Alternative 3 ..... IV.7-1071
IV.7-214 Plan-Wide Estimated Total Take for Covered Avian and Bat Species – Alternative 3 ..... IV.7-1075
IV.7-215 Plan-Wide Conservation Analysis for the Desert Linkage Network – Alternative 3 ..... IV.7-1080
IV.7-216 Plan-Wide Conservation Analysis for Natural Communities – Alternative 3 ..... IV.7-1090
IV.7-217 Plan-Wide Conservation Analysis for Covered Species Habitat – Alternative 3 ..... IV.7-1096
IV.7-218 Plan-Wide Conservation Analysis for Desert Tortoise Important Areas – Alternative 3 ..... IV.7-1099
IV.7-219 Plan-Wide Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 3 ..... IV.7-1100
IV.7-220 Critical Habitat within Plan-Wide Reserve Design for Non-Covered Species – Alternative 3 ..... IV.7-1101

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-221 BLM LUPA Impact Analysis for Natural Communities – Alternative 3 ..... IV.7-1106
IV.7-222 BLM LUPA Terrestrial Operational Impacts – Alternative 3 ..... IV.7-1111
IV.7-223 BLM LUPA Impact Analysis for Covered Species Habitat – Alternative 3 ..... IV.7-1116
IV.7-224 BLM LUPA Impact Analysis for Desert Tortoise Important Areas – Alternative 3 ..... IV.7-1119
IV.7-225 BLM LUPA Impact Analysis for Mohave Ground Squirrel Important Areas – Alternative 3 ..... IV.7-1120
IV.7-226 BLM LUPA Impact Analysis for Natural Communities and Associated Non-Covered Species – Alternative 3 ..... IV.7-1124
IV.7-227 BLM LUPA Impact Analysis for the Desert Linkage Network – Alternative 3 ..... IV.7-1133
IV.7-228 BLM LUPA Estimated Range of Bird and Bat Collisions per Year for Birds and Bats by Subarea – Alternative 3 ..... IV.7-1138
IV.7-229 BLM LUPA Estimated Total Take for Covered Avian and Bat Species – Alternative 3 ..... IV.7-1142
IV.7-230 BLM LUPA Conservation Analysis for the Desert Linkage Network – Alternative 3 ..... IV.7-1144
IV.7-231 BLM LUPA Conservation Analysis for Natural Communities – Alternative 3 ..... IV.7-1150
IV.7-232 BLM LUPA Conservation Analysis for Covered Species Habitat – Alternative 3 ..... IV.7-1156
IV.7-233 BLM LUPA Conservation Analysis for Desert Tortoise Important Areas – Alternative 3 ..... IV.7-1160
IV.7-234 BLM LUPA Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 3 ..... IV.7-1161
IV.7-235 Critical Habitat within BLM LUPA Conservation Designations for Non-Covered Species – Alternative 3 ..... IV.7-1162
IV.7-236 NCCP Conservation Analysis for the Desert Linkage Network – Alternative 3 ..... IV.7-1165
IV.7-237 NCCP Conservation Analysis for Natural Communities – Alternative 3 ..... IV.7-1171
IV.7-238 NCCP Conservation Analysis for Covered Species Habitat – Alternative 3 ..... IV.7-1180
IV.7-239 NCCP Conservation Analysis for Desert Tortoise Important Areas – Alternative 3 ..... IV.7-1187
IV.7-240 NCCP Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 3 ..... IV.7-1189
IV.7-241 GCP Impact Analysis for Natural Communities – Alternative 3 ..... IV.7-1193
IV.7-242 GCP Terrestrial Operational Impacts – Alternative 3 ..... IV.7-1198

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-243 GCP Impact Analysis for Covered Species Habitat – Alternative 3 ..... IV.7-1204
IV.7-244 GCP Impact Analysis for Desert Tortoise Important Areas – Alternative 3 ..... IV.7-1206
IV.7-245 GCP Impact Analysis for Mohave Ground Squirrel Important Areas – Alternative 3 ..... IV.7-1208
IV.7-246 GCP Impact Analysis for Natural Communities and Associated Non-Covered Species – Preferred Alternative IV.7-1212
IV.7-247 GCP Impact Analysis for the Desert Linkage Network – Alternative 3 ..... IV.7-1223
IV.7-248 GCP Estimated Range of Bird and Bat Collisions per Year by Subarea – Alternative 3 ..... IV.7-1228
IV.7-249 GCP Estimated Total Take for Covered Avian and Bat Species – Alternative 3 ..... IV.7-1231
IV.7-250 GCP Conservation Analysis for the Desert Linkage Network – Alternative 3 ..... IV.7-1232
IV.7-251 GCP Conservation Analysis for Natural Communities – Alternative 3 ..... IV.7-1238
IV.7-252 GCP Conservation Analysis for Covered Species Habitat – Alternative 3 IV.7-1243
IV.7-253 GCP Conservation Analysis for Desert Tortoise Important Areas – Alternative 3 ..... IV.7-1246
IV.7-254 GCP Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 3 ..... IV.7-1247
IV.7-255 Critical Habitat within GCP Lands for Non-Covered Species – Alternative 3 ..... IV.7-1248
IV.7-256 Estimated Acres of Natural Communities in BLM LUPA Outside of Plan Area – Alternative 3 ..... IV.7-1249
IV.7-257 Special-Status Species Occurring in BLM LUPA Outside of Plan Area – Alternative 3 ..... IV.7-1251
IV.7-258 Critical Habitat within BLM LUPA Conservation Designations for Special-Status Species – Alternative 3 ..... IV.7-1256
IV.7-259 Plan-Wide Impact Analysis for Natural Communities – Alternative 4 ..... IV.8-1292
IV.7-260 Plan-Wide Terrestrial Operational Impacts – Alternative 4 ..... IV.8-1298
IV.7-261 Plan-Wide Impact Analysis for Covered Species Habitat – Alternative 4 IV.8-1305
IV.7-262 Plan-Wide Impact Analysis for Desert Tortoise Important Areas – Alternative 4 ..... IV.8-1307
IV.7-263 Plan-Wide Impact Analysis for Mohave Ground Squirrel Important Areas – Alternative 4 ..... IV.8-1311
IV.7-264 Plan-Wide Impact Analysis for Natural Communities and Associated Non-Covered Species – Alternative 4 ..... IV.8-1319

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-265 Plan-Wide Impact Analysis for the Desert Linkage Network – Alternative 4 ..... IV.8-1329
IV.7-266 Plan-Wide Estimated Range of Collision per Year for Birds and Bats by Subarea – Alternative 4 ..... IV.8-1337
IV.7-267 Plan-Wide Estimated Total Take for Covered Avian and Bat Species – Alternative 4 ..... IV.8-1341
IV.7-268 Plan-Wide Conservation Analysis for the Desert Linkage Network – Alternative 4 ..... IV.8-1347
IV.7-269 Plan-Wide Conservation Analysis for Natural Communities – Alternative 4 ..... IV.8-1356
IV.7-270 Plan-Wide Conservation Analysis for Covered Species Habitat – Alternative 4 ..... IV.8-1361
IV.7-271 Plan-Wide Conservation Analysis for Desert Tortoise Important Areas – Alternative 4 ..... IV.8-1363
IV.7-272 Plan-Wide Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 4 ..... IV.8-1364
IV.7-273 Critical Habitat within Plan-Wide Reserve Design for Non-Covered Species – Alternative 4 ..... IV.8-1365
IV.7-274 BLM LUPA Impact Analysis for Natural Communities – Alternative 4 ..... IV.8-1370
IV.7-275 BLM LUPA Terrestrial Operational Impacts – Alternative 4 ..... IV.8-1375
IV.7-276 BLM LUPA Impact Analysis for Covered Species Habitat – Alternative 4 ..... IV.8-1381
IV.7-277 BLM LUPA Impact Analysis for Desert Tortoise Important Areas – Alternative 4 ..... IV.8-1383
IV.7-278 BLM LUPA Impact Analysis for Mohave Ground Squirrel Important Areas – Alternative 4 ..... IV.8-1385
IV.7-279 BLM LUPA Impact Analysis for Natural Communities and Associated Non-Covered Species – Preferred Alternative IV.8-1389
IV.7-280 BLM LUPA Impact Analysis for the Desert Linkage Network – Alternative 4 ..... IV.8-1396
IV.7-281 BLM LUPA Estimated Range of Bird and Bat Collisions per Year by Subarea – Alternative 4 ..... IV.8-1401
IV.7-282 BLM LUPA Estimated Total Take for Covered Avian and Bat Species – Alternative 4 ..... IV.8-1404
IV.7-283 BLM LUPA Conservation Analysis for the Desert Linkage Network – Alternative 4 ..... IV.8-1407
IV.7-284 BLM LUPA Conservation Analysis for Natural Communities – Alternative 4 ..... IV.8-1413

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-285 BLM LUPA Conservation Analysis for Covered Species Habitat – Alternative 4 ..... IV.8-1418
IV.7-286 BLM LUPA Conservation Analysis for Desert Tortoise Important Areas – Alternative 4 ..... IV.8-1421
IV.7-287 BLM LUPA Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 4 ..... IV.8-1422
IV.7-288 Critical Habitat within BLM LUPA Conservation Designations for Non-Covered Species – Alternative 4 ..... IV.8-1423
IV.7-289 NCCP Conservation Analysis for the Desert Linkage Network – Alternative 4 ..... IV.8-1426
IV.7-290 NCCP Conservation Analysis for Natural Communities – Alternative 4 ..... IV.8-1433
IV.7-291 NCCP Conservation Analysis for Covered Species Habitat – Alternative 4 ..... IV.8-1443
IV.7-292 NCCP Conservation Analysis for Desert Tortoise – Alternative 4 ..... IV.8-1445
IV.7-293 NCCP Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 4 ..... IV.8-1446
IV.7-294 GCP Impact Analysis for Natural Communities – Alternative 4 ..... IV.8-1450
IV.7-295 GCP Terrestrial Operational Impacts – Alternative 4 ..... IV.8-1455
IV.7-296 GCP Impact Analysis for Covered Species Habitat – Alternative 4 ..... IV.8-1460
IV.7-297 GCP Impact Analysis for Desert Tortoise Important Areas – Alternative 4 ..... IV.8-1463
IV.7-298 GCP Impact Analysis for Mohave Ground Squirrel Important Areas – Alternative 4 ..... IV.8-1464
IV.7-299 GCP Impact Analysis for Natural Communities and Associated Non-Covered Species – Alternative 4 ..... IV.8-1468
IV.7-300 GCP Impact Analysis for the Desert Linkage Network – Alternative 4 ..... IV.8-1475
IV.7-301 GCP Estimated Range of Bird and Bat Collisions per Year by Subarea – Alternative 4 ..... IV.8-1481
IV.7-302 GCP Estimated Total Take for Covered Avian and Bat Species – Alternative 4 ..... IV.8-1484
IV.7-303 GCP Conservation Analysis for the Desert Linkage Network – Alternative 4 ..... IV.8-1486
IV.7-304 GCP Conservation Analysis for Natural Communities – Alternative 4 ..... IV.8-1492
IV.7-305 GCP Conservation Analysis for Covered Species Habitat – Alternative 4 ..... IV.8-1498
IV.7-306 GCP Conservation Analysis for Desert Tortoise Important Areas – Alternative 4 ..... IV.8-1502
IV.7-307 GCP Conservation Analysis for Mohave Ground Squirrel Important Areas – Alternative 4 ..... IV.8-1503

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.7-308 Critical Habitat within GCP Lands for Non-Covered Species – Alternative 4 ..... IV.8-1505
IV.7-309 Estimated Acres of Natural Communities in BLM LUPA Outside of Plan Area – Alternative 4 ..... IV.8-1506
IV.7-310 Special-Status Species Occurring in BLM LUPA Outside of Plan Area – Alternative 4 ..... IV.8-1508
IV.7-311 Critical Habitat within BLM LUPA Conservation Designations for Special-Status Species – Alternative 4 ..... IV.8-1514
IV.8-1 Comparison of Preferred Alternative with the No Action Alternative for Plan-Wide DRECP IV.8-52
IV.8-2 Comparison of Preferred Alternative with the No Action Alternative for the BLM Land Use Plan Amendment IV.8-54
IV.8-3 Comparison of Preferred Alternative with the Alternative 1 for Plan-Wide DRECP IV.8-66
IV.8-4 Comparison of Preferred Alternative with IV.8-68
Alternative 1 for the BLM Land Use Plan Amendment IV.8-68
IV.8-5 Comparison of Preferred Alternative with Alternative 1 for the GCP IV.8-68
IV.8-6 Comparison of Preferred Alternative with Alternative 2 for Plan-Wide DRECP IV.8-80
IV.8-7 Comparison of Preferred Alternative With IV.8-82
Alternative 2 for the BLM Land Use Plan Amendment IV.8-82
IV.8-8 Comparison of Preferred Alternative with Alternative 2 for the GCP IV.8-82
IV.8-9 Comparison of Preferred Alternative with the IV.8-93
Alternative 3 for Plan-Wide DRECP IV.8-93
IV.8-10 Comparison of Preferred Alternative with IV.8-95
Alternative 3 for the BLM Land Use Plan Amendment IV.8-95
IV.8-11 Comparison of Preferred Alternative with Alternative 3 for the GCP IV.8-96
IV.8-12 Comparison of Preferred Alternative with Alternative 4 for Plan-Wide DRECP IV.8-107
IV.8-13 Comparison of Preferred Alternative with IV.8-109
Alternative 4 for the BLM Land Use Plan Amendment IV.8-109
IV.8-14 Comparison of Preferred Alternative with Alternative 4 for the GCP IV.8-110
IV.9-1 Comparison of Preferred Alternative with the No Action Alternative for Plan-wide DRECP IV.9-42
IV.9-2 Comparison of Preferred Alternative with the No Action Alternative for Plan-wide DRECP IV.9-42

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.9-3 Comparison of Preferred Alternative with the No Action Alternative for the BLM Land Use Plan Amendment IV.9-45
IV.9-4 Comparison of Preferred Alternative with the No Action Alternative for the BLM Land Use Plan Amendment IV.9-45
IV.9-5 Comparison of Preferred Alternative with Alternative 1 for Plan-wide DRECP IV.9-58
IV.9-6 Comparison of Preferred Alternative with the Alternative 1 for Plan-wide DRECP IV.9-58
IV.9-7 Comparison of Preferred Alternative with Alternative 1 for BLM LUPA IV.9-61
IV.9-8 Comparison of Preferred Alternative with the Alternative 1 for the BLM Land Use Plan Amendment IV.9-61
IV.9-9 Comparison of Preferred Alternative with Alternative 1 for GCP Lands IV.9-62
IV.9-10 Comparison of Preferred Alternative with Alternative 1 for the GCP IV.9-62
IV.9-11 Comparison of Preferred Alternative with Alternative 2 for Plan-wide DRECP IV.9-73
IV.9-12 Comparison of Preferred Alternative with Alternative 1 for Plan-wide DRECP IV.9-74
IV.9-13 Comparison of Preferred Alternative with Alternative 2 for BLM LUPA IV.9-76
IV.9-14 Comparison of Preferred Alternative with Alternative 2 for the BLM Land Use Plan Amendment IV.9-76
IV.9-15 Comparison of Preferred Alternative with No Action Alternative for GCP Lands IV.9-77
IV.9-16 Comparison of Preferred Alternative with Alternative 2 for the GCP IV.9-77
IV.9-17 Comparison of Preferred Alternative with Alternative 3 for Plan-wide DRECP IV.9-88
IV.9-18 Comparison of Preferred Alternative with the Alternative 3 for Plan-wide DRECP IV.9-88
IV.9-19 Comparison of Preferred Alternative with Alternative 3 for BLM LUPA IV.9-91
IV.9-20 Comparison of Preferred Alternative with Alternative 3 for the BLM Land Use Plan Amendment IV.9-91
IV.9-21 Comparison of Preferred Alternative with Alternative 3 for GCP Lands IV.9-92
IV.9-22 Comparison of Preferred Alternative with the Alternative 3 for the GCP IV.9-93
IV.9-23 Comparison of Preferred Alternative with Alternative 4 for Plan-wide DRECP IV.9-104
IV.9-24 Comparison of Preferred Alternative with Alternative 4 for Plan-wide DRECP IV.9-104

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.9-25 Comparison of Preferred Alternative with Alternative 4 for BLM LUPA.... IV.9-106
IV.9-26 Comparison of Preferred Alternative with Alternative 4 for the BLM Land Use Plan Amendment.... IV.9-107
IV.9-27 Comparison of Preferred Alternative with Alternative 4 for GCP Lands.... IV.9-108
IV.9-28 Comparison of Preferred Alternative with Alternative 4 for the GCP.... IV.9-108
IV.11-1 Potential Acres of Plan-wide and GCP DFAs.... IV.11-10
IV.11-2 Potential Acres of GCP1 Conservation Planning Areas2.... IV.11-11
IV.12-1 Acres of Important Farmland Converted to Nonagricultural Use by Alternative.... IV.12-6
IV.12-2 Acres of Williamson Act Land in Renewable Energy and Transmission Development Areas by Technology.... IV.12-6
IV.12-3 Acres of Important Farmland Converted to Nonagricultural Use by County and Alternative.... IV.12-7
IV.13-1 Potential Acres of Impacts to BLM Renewable Energy and Utility ROWs by Technology Type by Ecoregion Subarea – No Action Alternative.... IV.13-6
IV.13-2 Estimated Acres of BLM Renewable Energy and Utility ROWs in Conservation* by Ecoregion Subarea – No Action Alternative.... IV.13-11
IV.13-3 Potential Acres of Impacts to BLM Renewable Energy and Utility ROWs by Technology Type by Ecoregion Subarea – Preferred Alternative.... IV.13-15
IV.13-4 Estimated Acres of BLM Renewable Energy and Utility ROWs in Reserve Design Lands by Ecoregion Subarea – Preferred Alternative.... IV.13-19
IV.13-5 Potential Acres of Impacts to BLM Renewable Energy and Utility ROWs by Technology Type, by Ecoregion Subarea – Alternative 1.... IV.13-31
IV.13-6 Estimated Acres of BLM Renewable Energy and Utility ROWs in Reserve Design Lands by Ecoregion Subarea – Alternative 1.... IV.13-33
IV.13-7 Potential Acres of Impacts to BLM Renewable Energy and Utility ROWs by Technology Type, by Ecoregion Subarea – Alternative 2.... IV.13-40
IV.13-8 Estimated Acres of BLM Renewable Energy and Utility ROWs in Reserve Design Lands by Ecoregion Subarea – Alternative 2.... IV.13-42
IV.13-9 Potential Acres of Impacts to BLM Renewable Energy and Utility ROWs by Technology Type, by Ecoregion Subarea – Alternative 3.... IV.13-49
IV.13-10 Estimated Acres of BLM Renewable Energy and Utility ROWs in Reserve Design Lands by Ecoregion Subarea – Alternative 3.... IV.13-51
IV.13-11 Potential Acres of Impacts to BLM Renewable Energy and Utility ROWs by Technology Type, by Ecoregion Subarea – Alternative 4.... IV.13-59

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.13-12 Estimated Acres of BLM Renewable Energy and Utility ROWs in Reserve Design Lands by Ecoregion Subarea – Alternative 4 ..... IV.13-61
IV.14-1 Potential Acres of Impacts to BLM ACECs and SRMAs in Available Development Areas by Technology Type – No Action Alternative IV.14-7
IV.14-2 Existing BLM ACECs and SRMAs Within Plan Area – No Action Alternative IV.14-12
IV.14-3 Multiple-Use Classes Within BLM-Administered Lands in the CDCA Plan (acres) IV.14-13
IV.14-4 Existing BLM ACECs and SRMAs Outside the Plan Area – No Action Alternative IV.14-15
IV.14-5 Multiple-Use Classes Within BLM-Administered Lands in the CDCA Plan (acres) IV.14-16
IV.14-6 Acres of BLM Lands in Development Focus Areas and Impact by Technology Type – Preferred Alternative IV.14-17
IV.14-7 BLM Land Designations, Classifications, Allocations, and Lands with Wilderness Characteristics Within Special Analysis Areas – Preferred Alternative IV.14-20
IV.14-8 Acres of ACECs Within Each Disturbance Cap Category Under the Preferred Alternative IV.14-28
IV.14-9 ACECs With Reduced Acres Under the Preferred Alternative IV.14-29
IV.14-10 Acres of BLM Land Designations, Classifications, Allocations Outside the Plan Area - Preferred Alternative IV.14-32
IV.14-11 No Action Alternative (Available Development Areas) Compared With the Preferred Alternative (DFAs) for the Plan-wide DRECP IV.14-33
IV.14-12 Preferred Alternative (Reserve Design) Compared With No Action Alternative (Existing Conservation) for Plan-wide DRECP IV.14-34
IV.14-13 Acres of BLM Lands in Development Focus Areas and Impact by Technology Type – Alternative 1 ..... IV.14-37
IV.14-14 Acres of ACECs Within Each Disturbance Cap Category Under Alternative 1 ..... IV.14-43
IV.14-15 Acres of BLM Land Designations, Classifications, Allocations Outside the Plan Area – Alternative 1 ..... IV.14-45
IV.14-16 Alternative 1 Compared With the Preferred Alternative in DFAs for Plan-wide DRECP IV.14-46
IV.14-17 Alternative 1 Compared With the Preferred Alternative for Reserve Design Lands Within the Plan-wide DRECP IV.14-47

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.14-18 Acres of BLM Lands in Development Focus Areas and Impact by Technology Type – Alternative 2 ..... IV.14-50
IV.14-19 Acres of ACECs Within Each Disturbance Cap Category Under Alternative 2 ..... IV.14-57
IV.14-20 ACECs With Reduced Acres Under Alternative 2 ..... IV.14-57
IV.14-21 Acres of BLM Land Designations, Classifications, and Allocations Outside the Plan Area – Alternative 2 ..... IV.14-60
IV.14-22 Alternative 2 Compared With the Preferred Alternative in DFAs for Plan-wide DRECP IV.14-60
IV.14-23 Alternative 2 Compared With the Preferred Alternative for Reserve Design Lands Within the Plan-wide DRECP IV.14-62
IV.14-24 Acres of BLM Lands in Development Focus Areas and Impact by Technology Type – Alternative 3 ..... IV.14-64
IV.14-25 Acres of ACECs Within Each Disturbance Cap Category Under Alternative 3 ..... IV.14-72
IV.14-26 ACECs With Reduced Acres Under Alternative 3 ..... IV.14-72
IV.14-27 Acres of BLM Land Designations, Classifications, Allocations Outside the Plan Area – Alternative 3 ..... IV.14-74
IV.14-28 Alternative 3 Compared With the Preferred Alternative in DFAs for Plan-wide DRECP IV.14-75
IV.14-29 Alternative 3 Compared With the Preferred Alternative for Reserve Design Lands Within the Plan-wide DRECP IV.14-76
IV.14-30 Acres of BLM Lands in Development Focus Areas and Impact by Technology Type – Alternative 4 ..... IV.14-79
IV.14-31 Acres of ACECs Within Each Disturbance Cap Category Under Alternative 4 ..... IV.14-85
IV.14-32 ACECs With Reduced Acres Under Alternative 4 ..... IV.14-85
IV.14-33 Acres of BLM Land Designations, Classifications, and Allocations Outside the Plan Area – Alternative 4 ..... IV.14-88
IV.14-34 Alternative 4 Compared With the Preferred Alternative in DFAs for Plan-wide DRECP IV.14-88
IV.14-35 Alternative 4 Compared With the Preferred Alternative for Reserve Design Lands Within the Plan-wide DRECP IV.14-90
IV.15-1 Potential Acres of Mineral Resource Impacts by Technology Type – No Action Alternative IV.15-6
IV.15-2 Estimated Acres of Mineral Resources in Conservation and Protected Areas – No Action Alternative IV.15-10

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.15-3 Potential Acres of Mineral Resource Impacts by Technology Type on BLM Lands – No Action Alternative IV.15-12
IV.15-4 Estimated Acres of Mineral Resources on BLM Land Designations – No Action Alternative IV.15-13
IV.15-5 Estimated Acres of Mineral Resources Outside Plan Area – No Action Alternative IV.15-15
IV.15-6 Potential Acres of Mineral Resource Impacts by Technology Type – Preferred Alternative IV.15-16
IV.15-7 Estimated Acres of Mineral Resources within Reserve Design Lands – Preferred Alternative IV.15-23
IV.15-8 Potential Acres of Mineral Resource Impacts by Technology Type on BLM LUPA Lands – Preferred Alternative IV.15-26
IV.15-9 Estimated Acres of Mineral Resources in BLM LUPA Land Designation – Preferred Alternative IV.15-28
IV.15-10 Potential Acres of Mineral Resources Impacts on GCP Lands by Technology Type – Preferred Alternative IV.15-31
IV.15-11 Estimated Acres of Mineral Resources Within Reserve Design Lands on GCP Lands – Preferred Alternative IV.15-32
IV.15-12 Estimated Acres of Mineral Resources in BLM LUPA Lands Outside the Plan Area – Preferred Alternative IV.15-34
IV.15-13 Preferred Alternative (DFAs) Compared with No Action Alternative (Available Development Areas) for Plan-wide DRECP IV.15-37
IV.15-14 Preferred Alternative (Reserve Design) Compared with No Action Alternative (Existing Conservation) for Plan-wide DRECP IV.15-38
IV.15-15 Preferred Alternative (DFAs) Compared with No Action Alternative (Available Development Areas) for BLM Lands IV.15-40
IV.15-16 Preferred Alternative (BLM Land Designations) Compared with No Action Alternative (Existing ACECs and SRMAs) for BLM Lands IV.15-41
IV.15-17 Potential Acres of Mineral Resource Impacts by Technology Type – Alternative 1 ..... IV.15-42
IV.15-18 Estimated Acres of Mineral Resources within Reserve Design Lands – Alternative 1 ..... IV.15-46
IV.15-19 Estimated Acres of Mineral Resources within DFAs by Technology Type on BLM LUPA Lands – Alternative 1 ..... IV.15-49
IV.15-20 Estimated Acres of Mineral Resources in BLM LUPA Land Designation – Alternative 1 ..... IV.15-51

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.15-21 Potential Acres of Mineral Resources Impacts on GCP Lands by Technology Type –Alternative 1 ..... IV.15-54
IV.15-22 Estimated Acres of Mineral Resources Within Reserve Design Lands on GCP Lands – Alternative 1 ..... IV.15-56
IV.15-23 Estimated Acres of Mineral Resources in BLM LUPA Lands Outside the Plan Area – Alternative 1 ..... IV.15-58
IV.15-24 Alternative 1 Compared with the Preferred Alternative on DFAs for the Plan-wide DRECP IV.15-61
IV.15-25 Alternative 1 Compared with the Preferred Alternative on Reserve Design Lands for the Plan-wide DRECP IV.15-62
IV.15-26 Alternative 1 Compared with the Preferred Alternative on DFAs for BLM Lands IV.15-63
IV.15-27 Alternative 1 Compared with Preferred Alternative on Reserve Design Lands for BLM Lands IV.15-64
IV.15-28 Alternative 1 Compared with the Preferred Alternative on DFAs for GCP Lands IV.15-65
IV.15-29 Alternative 1 Compared with Preferred Alternative on Reserve Design Lands for GCP Lands IV.15-66
IV.15-30 Potential Acres of Mineral Resource Impacts by Technology Type – Alternative 2 ..... IV.15-67
IV.15-31 Estimated Acres of Mineral Resources within Reserve Design Lands – Alternative 2 ..... IV.15-72
IV.15-32 Estimated Acres of Mineral Resources within DFAs by Technology Type on BLM LUPA Lands – Alternative 2 ..... IV.15-74
IV.15-33 Estimated Acres of Mineral Resources in BLM LUPA Land Designations – Alternative 2 ..... IV.15-76
IV.15-34 Potential Acres of Mineral Resources Impacts on GCP Lands by Technology Type – Alternative 2 ..... IV.15-79
IV.15-35 Estimated Acres of Mineral Resources Within Reserve Design Lands on GCP Lands – Alternative 2 ..... IV.15-81
IV.15-36 Estimated Acres of Mineral Resources in BLM LUPA Lands Outside the Plan Area – Alternative 2 ..... IV.15-83
IV.15-37 Alternative 2 Compared with the Preferred Alternative on DFAs for the Plan-wide DRECP IV.15-86
IV.15-38 Alternative 2 Compared with the Preferred Alternative on Reserve Design Lands for the Plan-wide DRECP IV.15-87

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.15-39 Alternative 2 Compared With the Preferred Alternative on DFAs for BLM Lands IV.15-88
IV.15-40 Alternative 2 Compared with Preferred Alternative on Reserve Design Lands for BLM Lands IV.15-89
IV.15-41 Alternative 2 Compared With the Preferred Alternative on DFAs for GCP Lands IV.15-90
IV.15-42 Alternative 2 Compared With Preferred Alternative on Reserve Design Lands for GCP Lands IV.15-91
IV.15-43 Potential Acres of Mineral Resource Impacts by Technology Type – Alternative 3 ..... IV.15-92
IV.15-44 Estimated Acres of Mineral Resources Within Reserve Design Lands – Alternative 3 ..... IV.15-96
IV.15-45 Estimated Acres of Mineral Resources within DFAs by Technology Type on BLM LUPA Lands – Alternative 3 ..... IV.15-99
IV.15-46 Estimated Acres of Mineral Resources in BLM LUPA Land Designation – Alternative 3 ..... IV.15-101
IV.15-47 Potential Acres of Mineral Resources Impacts on GCP Lands by Technology Type – Alternative 3 ..... IV.15-103
IV.15-48 Estimated Acres of Mineral Resources within Reserve Design Lands on GCP Lands – Alternative 3 ..... IV.15-105
IV.15-49 Estimated Acres of Mineral Resources in BLM LUPA Lands Outside the Plan Area – Alternative 3 ..... IV.15-107
IV.15-50 Alternative 3 Compared with the Preferred Alternative on DFAs for the Plan-wide DRECP IV.15-110
IV.15-51 Alternative 3 Compared With the Preferred Alternative on Reserve Design Lands for the Plan-wide DRECP IV.15-111
IV.15-52 Alternative 3 Compared With the Preferred Alternative on DFAs for BLM Lands IV.15-112
IV.15-53 Alternative 3 Compared With Preferred Alternative on Reserve Design Lands for BLM Lands IV.15-113
IV.15-54 Alternative 3 Compared With the Preferred Alternative on DFAs for GCP Lands IV.15-114
IV.15-55 Alternative 3 Compared With Preferred Alternative on Reserve Design Lands for GCP Lands IV.15-115
IV.15-56 Potential Acres of Mineral Resource Impacts by Technology Type – Alternative 4 ..... IV.15-116
IV.15-57 Estimated Acres of Mineral Resources Within Reserve Design Lands – Alternative 4 ..... IV.15-120

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.15-58 Estimated Acres of Mineral Resources Within DFAs by Technology Type on BLM LUPA Lands – Alternative 4 ..... IV.15-123
IV.15-59 Estimated Acres of Mineral Resources in BLM LUPA Land Designation – Alternative 4 ..... IV.15-125
IV.15-60 Potential Acres of Mineral Resources Impacts on GCP Lands by Technology Type – Alternative 4 ..... IV.15-127
IV.15-61 Estimated Acres of Mineral Resources Within Reserve Design Lands on GCP Lands – Alternative 4 ..... IV.15-129
IV.15-62 Estimated Acres of Mineral Resources in BLM LUPA Lands Outside the Plan Area – Alternative 4 ..... IV.15-132
IV.15-63 Alternative 4 Compared With the Preferred Alternative on DFAs for the Plan-wide DRECP IV.15-135
IV.15-64 Alternative 4 Compared With the Preferred Alternative on Reserve Design Lands for the Plan-wide DRECP IV.15-136
IV.15-65 Alternative 4 Compared with the Preferred Alternative on DFAs for BLM Lands IV.15-137
IV.15-66 Alternative 4 Compared With Preferred Alternative on Reserve Design Lands for BLM Lands IV.15-138
IV.15-67 Alternative 4 Compared with the Preferred Alternative on DFAs for GCP Lands IV.15-139
IV.15-68 Alternative 4 Compared With Preferred Alternative on Reserve Design Lands for GCP Lands IV.15-140
IV.15-69 Summary Alternative Comparison of Potential Mineral Resource Impacts by Technology, Conservation Lands, and Study Area Lands for the Plan-wide DRECP IV.15-141
IV.16-1 Acres of Grazing Land Converted to Nonagricultural Use for Renewable Energy and Transmission Development by Alternative IV.16-6
IV.16-2 Acres of Grazing Land Included in Reserve Design by Alternative IV.16-6
IV.16-3 Acres of Private Grazing Land Converted to Nonagricultural Use for Renewable Energy and Transmission Development by County by Alternative IV.16-7
IV.16-4 Acres of Private Grazing Land Included in Reserve Design (Conservation Planning Areas) by County by Alternative IV.16-7
IV.16-5 Acres of Grazing Allotments Impacted by Renewable Energy and Transmission by Ecoregion Subarea by Alternative IV.16-8
IV.16-6 Acres of BLM Grazing Allotments Overlapping with BLM LUPA Conservation/Reserve Design IV.16-9
IV.18-1 Acreage of Recreation Designations Per Alternative IV.18-7

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.18-2a Acreage of Areas Managed for Recreation Emphasis on BLM Land Converted to Development Focus Areas IV.18-10
IV.18-2b Acreage of Areas Managed for Recreation Emphasis on BLM Land Converted to BLM Conservation Lands Only IV.18-11
IV.18-3 Acreage of Areas Managed for Recreation Emphasis on BLM Land Converted to SRMAs IV.18-12
IV.18-4 Acreage of Areas Managed for Recreation Emphasis on BLM Land Overlapping with BLM Conservation Lands IV.18-13
IV.20-1 Potentially Affected Visual Resources and Visually Important Management Units by Alternative IV.20-14
IV.20-2 VRI Classes Within Existing VRM Classes on BLM LUPA Lands – No Action Alternative IV.20-27
IV.20-3 Affected Visual Resources – No Action Alternative Compared to Preferred Alternative IV.20-34
IV.20-4 VRI Classes Within Proposed VRM Classes on BLM LUPA Lands – Preferred Alternative IV.20-50
IV.20-5 Affected Visual Resources – Preferred Alternative Compared to Alternative 1 ..... IV.20-56
IV.20-6 VRI Classes Within Proposed VRM Classes on BLM LUPA Lands – Alternative 1 (all ecoregion subareas, acres and percentage) IV.20-69
IV.20-7 Affected Visual Resources – Preferred Alternative Compared to Alternative 2 ..... IV.20-73
IV.20-8 VRI Classes Within Proposed VRM Classes on BLM LUPA Lands – Alternative 2 ..... IV.20-85
IV.20-9 Affected Visual Resources – Preferred Alternative Compared to Alternative 3 ..... IV.20-91
IV.20-10 VRI Classes Within Proposed VRM Classes on BLM LUPA Lands – Alternative 3 ..... IV.20-103
IV.20-11 Affected Visual Resources – Preferred Alternative Compared to Alternative 4 ..... IV.20-107
IV.20-12 VRI Classes Within Proposed VRM Classes on BLM LUPA Lands – Alternative 4 ..... IV.20-120
IV.21-1 Noise Levels for Common Construction Equipment IV.21-4
IV.24-1 Potential Acres of DOD Operations Impacted by Technology Type – No Action Alternative IV.24-6
IV.24-2 Potential Acres of DOD Operations Impacted by Technology Type – Preferred Alternative IV.24-15

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.24-3 DOD Lands That Intersect With Special Analysis Areas – Preferred Alternative IV.24-16
IV.24-4 Potential Acres of DOD Operations Impacted by Technology Type – Alternative 1 ..... IV.24-22
IV.24-5 DOD Lands That Intersect With Special Analysis Areas – Preferred Alternative IV.24-25
IV.24-6 Potential Acres of DOD Operations Impacted by Technology Type – Alternative 2 ..... IV.24-30
IV.24-7 DOD Lands That Intersect With Special Analysis Areas – Alternative 2 ..... IV.24-33
IV.24-8 Potential Acres of DOD Operations Impacted by Technology Type – Alternative 3 ..... IV.24-38
IV.24-9 DOD Lands That Intersect With Special Analysis Areas – Alternative 3 ..... IV.24-41
IV.24-10 Potential Acres of DOD Operations Impacted by Technology Type – Alternative 4 ..... IV.24-45
IV.24-11 DOD Lands That Intersect With Special Analysis Areas – Alternative 4 ..... IV.24-49
IV.25-1 Renewable Energy Projects – Operational (OP), Under Construction (UC), and Approved (A) as of October 2013 ..... IV.25-6
IV.25-2 Renewable Energy Projects – Under Environmental Review (UER) as of October 2013 ..... IV.25-9
IV.25-3 BLM Wind Development and First-in-Line1 Solar Applications IV.25-10
IV.25-4 Other Large Projects Within the DRECP Boundary IV.25-11
IV.25-5 Summary of the Contribution of the DRECP to Cumulative Impacts on Covered Species IV.25-58
IV.26-1 Location of Required CEQA Components in EIR/EIS IV.26-1
IV.26-2 Summary of Significant and Unavoidable Adverse Impacts Under CEQA IV.26-7
IV.26-3 Summary of Less Than Significant Impacts Under CEQA IV.26-14
IV.27-1 Plan-wide Renewable Energy Development/Analysis Assumptions by Alternative IV.27-7
IV.27-2 Plan-wide Conservation Assumptions by Alternative IV.27-8
IV.27-3 Comparison of Plan-wide Alternatives – Key Biological Resource Effects IV.27-11
IV.27-4 Comparison of Plan-wide Alternatives – Covered Species Habitat Effects IV.27-13
IV.27-5 Comparison of Plan-wide Alternatives – Key Nonbiological Resource Effects IV.27-15
IV.27-6 BLM National Conservation Lands Attributes by Alternative IV.27-23

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.27-7 Comparison of BLM LUPA Alternatives – Key Biological Resource Effects IV.27-27
IV.27-8 NCCP Assumptions by Alternative IV.27-29
IV.27-9 Characteristics of GCP Alternatives IV.27-30
IV.27-10 Comparison of GCP Alternatives – Key Biological Resource Effects IV.27-31
IV.27-11 Planning Goals by Alternative IV.27-33
V-1 DRECP EIR/EIS Public Scoping Comments by Category V-3
V-2 DRECP Meetings V-13

EXHIBITS

I.3-1a DRECP and NCCP Reserve Design Concepts and Definitions I.3-7
I.3-1b DRECP and NCCP Reserve Design Durability Concepts I.3-8
I.3-2 DRECP Reserve Design Process I.3-23
I.3-3 DRECP Plan Integration Process I.3-63
II.1-1 Components of the DRECP II.1-3
II.3-1 Map Legends Definitions II.3-5
II.3-2 Components of the Preferred Alternative II.3-10
II.3-3 Biological CMAs Structure II.3-22
II.3-4 Avoidance and Minimization CMAs II.3-26
II.3-5 Tiered Compensation System II.3-84
II.3-6 The Adaptive Management Cycle of the DRECP Adaptive Management Framework II.3-143
II.3-7 Terrestrial Landscape Intactness in Six Classes from Very High (Relatively Undisturbed in Dark Green) to Very Low (Highly Disturbed from Agriculture, Resource Development, or Urbanization in Dark Blue) II.3-147
II.3-8 DRECP Implementation Structure II.3-207
II.3-9 Summary Submittal and Review Process for Projects Seeking Streamlining Under DRECP Including Required Avoidance, Minimization, and Mitigation Requirements II.3-233
II.4-1 Components of Alternative 1 ..... II.4-3
II.5-1 Components of Alternative 2 ..... II.5-3
II.6-1 Components of Alternative 3 ..... II.6-3
II.7-1 Components of Alternative 4 ..... II.7-3
III.10-1 Distribution of Estimated Fossil Yield Potential in the Plan Area III.10-21
III.10-2 Potential Fossil Yield Classification of Geology in the Plan Area III.10-23

TABLE OF CONTENTS (CONTINUED)

Page No.

IV.10-1 Comparison of Plan-Wide Paleontological Resource Impacts by Alternative IV.10-43
IV.10-2 Comparison of BLM LUPA Paleontological Resource Impacts by Alternative IV.10-44

GLOSSARY OF TERMS

A

action alternatives. The range of alternatives analyzed in detail in the Desert Renewable Energy Conservation Plan (DRECP or Plan) that define the spatial distribution of Covered Activities, including renewable energy, transmission development, a reserve design, and Conservation and Management Actions (CMAs). Locations, configurations, and size of Development Focus Areas (DFAs) and the DRECP Plan-Wide Reserve Design Envelope vary among alternatives. The Bureau of Land Management (BLM) Land Use Plan Amendment (LUPA) element also includes proposed land allocations, in addition to those mentioned above, and Visual Resource Management classes.

adaptive management. A process for assimilating new information, including from monitoring and research, and assessing if adjustments to CMAs are needed. The Monitoring and Adaptive Management Program (MAMP) is the vehicle for structuring and reporting adaptive management in the DRECP Plan Area, and implementing actions deemed necessary as needed.

Applicant. A public or private entity, or an individual, that applies to the Wildlife Agencies for a permit for incidental take authorization under Section 2835 of the state Natural Community Conservation Planning Act and/or Section 10 of the federal Endangered Species Act, for taking that is incidental to a Covered Activity. Only nonfederal entities may apply for an incidental take permit under the Endangered Species Act.

Area of Critical Environmental Concern (ACEC). A BLM area within public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems of processes, or to protect life and safety from natural hazards. The ACECs are part of the BLM LUPA conservation designations in the Plan Area. Defined in Section 103(a) of the Federal Land Policy and Management Act (FLPMA) of 1976, as amended, and regulation 43 Code of Federal Regulations (CFR) 1601.0-5(a).

available lands (under the action alternatives). Lands within the Plan Area, except for military, tribal, and open off-highway vehicle (OHV) areas.

avoidance to the maximum extent practicable (as referenced in DRECP CMAs). A standard identified in the DRECP CMAs and applied to implementation of DRECP Covered Activities. Under this standard, impacts to identified biological and nonbiological resources are not allowed unless there is no reasonable or practicable means of avoidance that is consistent with the basic objectives of the covered project or action. Compensation for unavoidable impacts would be required as specified in the DRECP. The term "maximum

extent practicable" as used here is applicable only to the term as it is used in the CMAs; it does not apply to the term as it is used in the Endangered Species Act incidental take issuance criteria.

B

baseline monitoring. A type of monitoring in which a designated resource specialist that assembles an initial set of information or quantitative data, through an accepted protocol, for comparison or a control by which a determination can be made in the future as to whether change has occurred through events, actions, or time. Baseline monitoring may be appropriate in areas that have not been sufficiently surveyed or for which relevant data is otherwise lacking.

biological monitoring. Visual survey of an area conducted by a designated biologist to determine if a biological resource is present. Biological monitoring is commonly conducted on the sites of proposed projects. Biological monitoring conducted during the implementation of a Covered Activity is used to implement CMAs that require construction setbacks or that require the designated biologist to move a resource out of harm's way.

BLM disturbance cap. Limit on ground-disturbing activities within BLM ACECs and/or National Conservation Lands (NCLs) as called for in the LUPA alternatives. Expressed as a percentage of total ACEC and/or National Conservation Land unit acreage, and cumulatively considering past, present, and future disturbance. Baseline (past and present) disturbance would be determined by the most current imagery and knowledge at the time of an individual project proposal.

BLM LUPA conservation designations (also known as BLM conservation lands or BLM conservation allocations). Administrative designations that would include NCLs, ACEC, and Wildlife Allocation designations on BLM-administered land. BLM Wilderness Areas, Wilderness Study Areas, National Historic Trails, and Wild and Scenic River designations (existing and proposed) are included as part of the existing Legislatively and Legally Protected Areas (LLPAs). The BLM LUPA conservation designations were identified through the planning process and considered the biological and nonbiological resource values across the Plan Area.

BLM unallocated land (also known as BLM undesignated land). BLM-administered lands for which there is no specific land-use allocation.

breeding habitat. Natural communities or landscapes that contain elements required for the reproduction of a wildlife Covered Species; for example, tree or canopy structure, vegetation composition, soil type, or hydrological requirement. Breeding habitat is also mapped or modeled habitat with confirmed reproductive populations of wildlife Covered Species.

C

California Department of Fish and Wildlife (CDFW) fully protected species. Any species identified in California Fish and Game Code Sections 3511, 4700, 4800, 5050 or 5515. Such species may not be taken or possessed at any time, and no licenses or permits may be issued for their take except under an approved Natural Community Conservation Plan (NCCP) or for collection for necessary scientific research.

California Desert Conservation Area (CDCA). As defined in Section 601 of the FLPMA, the CDCA is a 25-million-acre expanse of land in Southern California designated by Congress in 1976 through the FLPMA. About 10 million acres of the CDCA are administered by BLM under its CDCA Plan.

clearance survey. Survey for Covered Species conducted immediately prior to vegetation and/or ground disturbance from a Covered Activity. Clearance surveys must be conducted throughout the project area and in accordance with applicable species-specific protocols, as approved by the DRECP Coordination Group and the Wildlife Agencies, to detect and clear (i.e., remove, translocate) out of harm's way as many individuals of a species as feasible prior to disturbance.

compensation and compensatory mitigation. For the purposes of the DRECP, compensation and compensatory mitigation mean replacing or providing substitute resources or habitats by acquiring and conserving lands from willing sellers and including them in the DRECP Conservation Area, or by non-acquisition measures, such as habitat management and enhancement activities on already-conserved lands.

Conservation and Management Actions (CMAs). The specific set of avoidance, minimization, compensation, and additional conservation actions for biological and other resources that would be required to meet the Step-Down Biological Objectives and other resource goals and objectives through implementation of the DRECP. The CMAs describe avoidance and minimization measures for siting, design, pre-construction, construction, maintenance, operation, and decommissioning of Covered Activities. On BLM land, the CMAs also apply to other activities. The CMAs also describe the compensation requirements for Covered Activities that would implement CMAs within the DRECP Conservation Area. Within BLM LUPA conservation designations (i.e., NCL, ACEC, or Wildlife Allocation), the BLM Management Plans (see DRECP Appendix L) for each land management unit (i.e., each named NCL, ACEC, or Wildlife Allocation area) describe the unit-specific management actions and are combined with additional CMAs that together serve as CMAs for those portions of the BLM-administered lands in the Plan Area.

Conservation Planning Areas (CPAs). In each action alternative, the portion of the DRECP Plan-Wide Reserve Design Envelope that falls outside of existing conservation areas and

BLM-administered lands. CPAs encompass both private lands and nonfederal public lands and include, but are not limited to, nonfederal lands within the Interagency Plan-Wide Conservation Priority Areas. A portion of the DRECP Conservation Area will be assembled by acquiring land or conservation easements from willing sellers in the CPAs to contribute to meeting the DRECP Plan-wide Biological Goals and Objectives (BGOs).

conserve. The term "conserve" (or "conservation") as used in the DRECP Plan-wide BGOs includes land acquisition (e.g., fee title purchase from willing sellers), other forms of land protection (e.g., recording a conservation easement on lands with willing land owners), BLM LUPA conservation designations (i.e., National Conservation Lands [NCL], ACEC, and Wildlife Allocations), restoration and enhancement activities, management actions identified for natural communities and Covered Species, and securing funding for land management and monitoring for Covered Species, natural communities, and ecological processes. For purposes of the Natural Community Conservation Planning Act and CDFW's approval of the DRECP as an NCCP, to conserve Covered Species and natural communities means to use methods and procedures within the Plan Area that are necessary to bring any Covered Species to the point at which the conservation measures are not necessary, and for Covered Species that are not listed, to maintain or enhance the condition of the species so that Covered Activities do not contribute to the potential need for future listing by the state.

Covered Activities. Renewable energy development and transmission projects, and conservation activities as described and analyzed in the DRECP, and that would be considered for incidental take permits under Section 2835 of the state Natural Community Conservation Planning Act and/or Section 10 of the federal Endangered Species Act, for otherwise lawful activities. Covered renewable energy development includes geothermal, solar thermal, photovoltaic solar, and wind development and transmission.

Covered Species. Species whose conservation and management are provided for in the DRECP and for which Applicants may seek permits for incidental take of Covered Species resulting from Covered Activities under Section 2835 of the state Natural Community Conservation Planning Act, Section 10 of the federal Endangered Species Act, and/or the Bald and Golden Eagle Protection Act, as appropriate.

creosote bush rings. Rings of creosote bush (*Larrea tridentata*) that form over long periods of time. As a single creosote bush produces new branches at the periphery of its crown, the branches in the center of the crown begin to die. Eventually a sterile area of bare ground occupies the center of the original shrub, and as the ring becomes larger the original shrub segments into several shrubs (satellites), forming a ring around the point where the original shrub originated. As more time goes by these rings become elliptical rather than circular. The satellite shrubs in a ring are the same genetically, attesting to the fact that they form a single clone originating from one original shrub. Vasek (1980) showed

that some of these clones are several thousand years old. The largest known creosote ring is 20.5 feet in diameter and may be 11,700 years old.

Critical Habitat (CH). Critical habitat is defined in Section 3(5)(A) of the federal Endangered Species Act as (1) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Endangered Species Act, on which are found those physical or biological features essential to the conservation of the species, and which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. Designated critical habitat is protected under Section 7(a)(2) of the Endangered Species Act, which requires federal agencies to ensure that any action they fund, authorize, or carry out is not likely to result in the destruction or adverse modification of critical habitat.

D

designated biologist. A biologist who is approved as qualified by the DRECP Coordination Group, including Wildlife Agency representatives as appropriate. A designated biologist is the person responsible for overseeing compliance with applicable CMAs for a Covered Activity, including measures to avoid and minimize biological impacts. The responsibilities of a designated biologist include organizing survey and monitoring efforts and being responsible for the content of compliance reports provided to the DRECP Coordination Group.

Development Focus Areas (DFAs). Locations where renewable energy generation is covered and could be streamlined for approval under the DRECP. The DRECP NCCP and General Conservation Plan (GCP) permits only cover renewable energy generation projects that are sited in a DFA, and the BLM LUPA will only streamline and provide incentives for renewable energy projects sited in a DFA. Transmission projects are linear projects traversing DFAs and areas outside DFAs and are covered within and outside of DFAs.

distributed generation. The 2011 Integrated Energy Policy Report published by the California Energy Commission (CEC) defines distributed generation as: "(1) fuels and technologies accepted as renewable for purposes of the Renewable Portfolio Standard (RPS); (2) sized up to 20 MW; and (3) located within the low-voltage distribution grid or supplying power directly to a consumer" (CEC 2012).

DRECP Coordination Group. The DRECP Coordination Group is the multiagency group responsible for day-to-day implementation of Plan-wide programs, coordination among DRECP participating entities regarding implementation of each DRECP planning component, coordination with public agencies and stakeholders, and public outreach. See DRECP Volume II, Section II.3.1.5.2.4, for a description of the membership, roles, and responsibilities of the DRECP Coordination Group.

DRECP Conservation Area. Lands within the DRECP Plan-Wide Reserve Design Envelope that have protection and management for Covered Species and other BLM Sensitive Species, their habitat, and ecosystem function. The DRECP Conservation Area includes LLPAs, BLM Conservation Lands, and CPA lands that are acquired as part of implementation of the DRECP. Non-acquisition compensatory mitigation actions would be implemented exclusively on lands in the DRECP Conservation Area. CMAs for the reserve would occur within the DRECP Conservation Area.

DRECP Land Cover Map. A detailed map of natural communities and other land covers for the entire Plan Area. The land cover map is a composite of fine-scale and medium-scale mapping organized hierarchically according to the National Vegetation Classification Standard, including general community groupings, natural communities, and alliance-level mapping units.

DRECP Plan-Wide Reserve Design Envelope. Mapped area within which protection and management of Covered Species, other BLM Sensitive Species, their habitat, and ecosystem function would occur to meet the DRECP Plan-wide BGOs; includes LLPAs, BLM Conservation Lands, and CPAs. A DRECP Plan-Wide Reserve Design Envelope is identified for each action alternative. These lands are also referred to in the document as "DRECP Reserve," "reserve," "reserve lands," "reserve design," and "reserve system."

DRECP Natural Community Conservation Plan (NCCP). The NCCP prepared to provide for the conservation and management of Covered Species and to address the impacts of Covered Activities. The DRECP NCCP BGOs, the DRECP NCCP Reserve Design, BLM Conservation Lands, DFAs, and CMAs are the essential elements of the DRECP NCCP. The DRECP NCCP is informed by, and is designed to implement a substantial portion of, the DRECP Plan-Wide Conservation Strategy and a substantial portion of the NCCP Conceptual Plan-Wide Reserve Design. The DRECP NCCP provides the basis for the issuance of take authorizations for Covered Activities under Section 2835 of the Natural Community Conservation Planning Act.

DRECP NCCP BGOs. Refer to Step-Down Biological Objectives.

DRECP NCCP Reserve Design. The planning envelope that defines the areas within which durable, long-term protection and management of lands for DRECP Covered Species is necessary to achieve Step-Down Biological Objectives. The DRECP NCCP Reserve Design is a portion of the NCCP Conceptual Plan-Wide NCCP Reserve Design. The DRECP NCCP Reserve will be created by providing durable, long-term protection and management for lands within the DRECP NCCP Reserve Design.

DRECP Plan-wide BGOs. Biological Goals and Objectives (BGOs) contain both biological goals, which are broad guiding principles for the biological conservation strategy that are

typically qualitative, and biological objectives, which are biological conservation targets or desired conditions. They articulate a desired outcome resulting from implementation of the biological conservation strategy. To the extent feasible, objectives should be measurable and quantitative. The DRECP Plan-wide BGOs are a quantitative and qualitative description of what must be done to conserve natural communities and Covered Species in the Plan Area. DRECP Plan-wide BGOs drive the DRECP Plan-Wide Conservation Strategy. The Step-Down Biological Objectives are the contribution of DRECP implementation toward achieving the DRECP Plan-wide BGOs that is commensurate with the impacts of Covered Activities.

DRECP Plan-Wide Conservation Strategy. Plan-wide description of how to achieve the DRECP Plan-wide BGOs in the Plan Area. The DRECP Plan-wide BGOs, CPAs, Interagency Plan-Wide Conservation Priority Areas, BLM Conservation Lands, CMAs and DRECP MAMP are the essential elements of the DRECP Plan-Wide Conservation Strategy.

DRECP Plan-Wide Reserve Design Envelope. Mapped area within which protection and management of Covered Species would occur to meet DRECP Plan-wide BGOs; includes LLPAs, BLM Conservation Lands, and CPAs. A DRECP Plan-Wide Reserve Design Envelope is identified for each action alternative. For a description of the reserve design process and methods, see Volume I, Section I.3.3.4, and Appendix D.

DRECP Variance Lands. Areas addressed in certain DRECP action alternatives that represent portions of the BLM Solar Programmatic Environmental Impact Statement (PEIS) Variance Lands and other BLM lands identified through the LUPA as screened for the DRECP using BLM DRECP screening criteria (Section II.3.2.1.2), and Future Assessment Areas (FAAs). These lands are potentially available for renewable energy development, but projects on variance lands are not covered in the DRECP. Project Applicants must demonstrate that a proposed project on variance lands will avoid, minimize, and/or mitigate sensitive resources as necessary and will be compatible with the underlying BLM land allocation, and the overall DRECP design. Applications in DRECP Variance Lands will follow the process described in the Solar PEIS Record of Decision, Section B.5. In Alternative 4, the BLM Variance Lands have not been additionally modified for the DRECP and appear as they do in the BLM Solar PEIS.

E

ecoregion subarea. Planning units based on U.S. Department of Agriculture (USDA) ecoregion boundaries and used for DRECP planning and analysis. Some USDA ecoregion boundaries were consolidated to define DRECP ecoregion subareas; see DRECP Figure I.3-1 (Volume I, Chapter I.3) for depiction of names and geographic boundaries of the ecoregion subareas. The DRECP contains 10 ecoregion subareas.

ecoregion subunit. A subunit within an ecoregion subarea (e.g., West Mojave 1); created specifically for DRECP and used for quantitative analyses to provide finer geographic

resolution in the megawatt distribution, analysis of operational effects, etc. See Volume IV for analysis of impacts, and see Figure IV.7-1 (Chapter IV.7) for a depiction of names and geographic boundaries of ecoregion subunits. The DRECP contains 22 ecoregion subunits.

existing conservation areas. Areas where natural resources are substantially protected under existing law or legal protections, including Legislatively and Legally Protected Areas (LLPAs), existing mitigation lands from previously approved projects, and Military Expansion Mitigation Lands (MEMLs). In the DRECP Plan-Wide Conservation Strategy, these lands are assumed to be protected and managed for the benefit of Covered Species under existing regimes.

Extensive Recreation Management Areas (ERMAs). BLM administrative units that require specific management consideration in order to address recreation use and demand. The ERMAs are managed to support and sustain the principal recreation activities and associated qualities and conditions. Recreation management actions within an ERMA are limited to only those of a custodial nature. Management of ERMA areas are commensurate with the management of other resources and resource uses.

F

federal lands. Land or interest in land owned and/or administered by the United States. Covered Activities on federal lands in the Plan Area are administered by the Secretary of the Interior through the BLM. Other federal lands administered by the Bureau of Reclamation, or BLM lands withdrawn by other agencies and purposes not encompassing renewable energy generation and transmission, and not relied upon to meet DRECP goals and objectives, are therefore not included in the definition of federal lands as used in the DRECP context.

foraging habitat. Natural communities or landscapes that contain elements required for Covered Species foraging; for example, particular vegetation consumed by wildlife Covered Species or habitat for species that are a primary source of Covered Species' diets.

Forest Service sensitive species. Those plant and animal species identified by a Regional Forester of the USDA Forest Service for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density, and significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

Future Assessment Areas (FAAs). Designated areas in certain action alternatives that are subject to future assessment for suitability for renewable energy development or conservation designation. The knowledge about the value of these areas for renewable energy development is ambiguous. The current known value of these areas for ecological

conservation is moderate to low; therefore, the areas are not allocated to either development or conservation and are assigned to future assessment and decisions. The DRECP does not cover renewable energy development in FAAs, nor are the FAAs part of reserve design envelopes within alternatives or ecological conservation designation, but FAAs represent areas where solar, wind, and geothermal energy development, operation, and decommissioning, or inclusion in the reserve/ecological conservation designation could be covered through an amendment to the DRECP and permits issued thereunder. Where FAAs occur on federal public lands, these areas would be open to renewable energy development under the BLM LUPA, but would require that an Applicant follow a variance process before the BLM would accept their application for processing. Where they occur on nonfederal lands, these areas would be open to renewable energy development upon amendment of the GCP.

G

General Conservation Plan (GCP). The USFWS proposed action evaluated in the DRECP (see DRECP Volume I, Section I.3.3). A GCP is an "umbrella" type of programmatic Habitat Conservation Plan (HCP) for nonfederal lands in accordance with Section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended, that the USFWS develops for adoption by subsequent interested parties who then apply to USFWS for incidental take permits for Covered Species that are consistent with the GCP. The GCP provides a framework for streamlining future Endangered Species Act Section 10 permit decisions after the overall interagency DRECP is approved.

geothermal project. Covered Activities that involve the construction, operation, and maintenance of a facility that generates energy through steam from wells in geothermally active areas. Geothermal projects may include well sites, pipelines, towers, roads, pump or maintenance buildings, generators, transformers, and other supporting infrastructure.

gigawatt (GW). Measure of energy equal to one billion watts. Used as a measure of instantaneous generation capacity.

gigawatt-hour (GWh). Measure of power equivalent to 10^9 watt hours. Used as a measure of energy production from generation facilities.

ground-mounted distributed generation project. For purposes of DRECP, a solar power system of 20 megawatts (MW) or less consisting of solar modules held in place by racks or frames that are attached to ground-based mounting supports.

H

habitat assessment. Use of the DRECP land cover mapping and/or species model(s), as well as reconnaissance-level site visits and available aerial photography for confirmation of site conditions and mapping of natural communities and species' suitable habitat. For all Covered Activities, a habitat assessment will be required to assess project site-specific natural communities and Covered Species.

herd area. The areas on BLM land in which wild horses and burros were found when the Wild Free-Roaming Horses and Burros Act of 1971 was passed. These are the only areas BLM may manage horses by law.

Herd Management Area. A BLM land allocation. The areas within each herd area that BLM manages to sustain healthy and diverse wild horse and burro populations over the long term.

I

impervious and urban built-up land. Existing developed areas based on the DRECP land cover map.

Interagency Plan-Wide Conservation Priority Areas. Mapped areas of key biological importance within the DRECP Plan-Wide Reserve Design Envelope for each alternative within which protection and management of some lands for Covered Species is necessary to contribute to DRECP Plan-wide BGOs, achieve Step-Down Biological Objectives, and mitigate the effects of incidental take of Covered Species. Compensatory mitigation actions will be focused primarily within the Interagency Plan-Wide Conservation Priority Areas.

K

kilowatt (kW). Measure of energy equal to 1,000 watts.

L

Land Use Plan Amendment (LUPA). BLM's component of the DRECP. The LUPA is a set of decisions that establishes management direction for BLM-administered land within an administrative area through amendment to existing land use plans. The DRECP BLM LUPA amends portions of the following BLM land use and resource management plans (RMPs): CDCA Plan and its amendments: Western Mojave Plan (WEMO), Northern and Eastern Colorado Desert Coordinated Management Plan (NECO), and Northern and Eastern Mojave Plan (NEMO). The LUPA also applies to the Bishop RMP and the Caliente/Bakersfield RMP. Described in Section 202 of the FLPMA of 1976, as amended, and in regulation 43 CFR 1600.

Legislatively and Legally Protected Areas (LLPAs). Existing protected lands, including: Wilderness Areas, National Parks, National Preserves, National Wildlife Refuges, California State Parks and Recreation Lands, CDFW Conservation Areas (Ecological Reserves and Wildlife Areas), CDFW areas, privately held conservation areas including mitigation/conservation banks approved by the Wildlife Agencies, land trust lands, Wilderness Study Areas, Wild and Scenic Rivers, and National Scenic and Historic Trails.

limited area. Under BLM's Trails and Travel Management program, an area restricted at certain times, in certain areas, or to certain vehicular use.

LUPA Planning Area. All BLM managed lands in the DRECP area as well as additional BLM-managed lands outside the DRECP Plan Area, but within the CDCA as identified in Chapter I.0, Figure I.0-1.

M

megawatt (MW). Measure of energy equal to one million watts. Used as a measure of instantaneous generation capacity from a generation facility.

Military Expansion Mitigation Lands (MEMLs). Lands conserved as mitigation for the expansion of Department of Defense installations and considered part of existing conservation areas under the DRECP.

military lands. Department of Defense installations within the Plan Area, included as part of the Other Lands under the DRECP.

Mineral Resource Zones (MRZs). To implement the Surface Mining and Reclamation Act, the State Geologist developed the MRZ nomenclature and criteria based on the California Mineral Land Classification System. The California Mineral Land Classification System represents the relationship between knowledge of mineral deposits and their economic characteristics (grade and size). Lands are classified into four main categories: MRZ-1, areas where geologic information indicates no significant mineral deposits are present; MRZ-2, areas that contain identified mineral resources; MRZ-3, areas of undetermined mineral resource significance; and MRZ-4, areas of unknown mineral resource potential.

mitigation. As defined under both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA), mitigation includes: (a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.

Mojave yucca rings. Rings of Mojave yucca (*Yucca shidigera*) that form in a similar manner as described for creosote bush rings (see definition). Mojave yucca reproduces sexually through the production of seed; vegetative reproduction is much more common and likely much more important to its persistence and spread (LaPre 1979; Gucker 2006). The species produces sprouts from short rhizomes that are close to parent stems (Gucker 2006). Rings form as the clonal growth proceeds outward from the original parent stem, and the central plant ages and dies (Gucker 2006). Mojave yucca rings can be as large as 20 feet in diameter and have up to 130 stems. Rings this large are thought to be at least 2,100 years old (mojavedesert.net 2013).

Monitoring and Adaptive Management Program (MAMP). A component of the DRECP Plan-Wide Conservation Strategy needed to comply with NCCP, LUPA, and GCP requirements. The MAMP is the vehicle for structuring and reporting adaptive management in the Plan Area.

N

National Landscape Conservation System (NLCS). In accordance with and as defined by Public Law 111-11 in the Omnibus Public Land Management Act of 2009 (PL 111-11), Sections 2002(a),(b)(1)(A–F), and (b)(2)(D), the NLCS is a BLM land use designation to conserve, protect, and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations. Areas specially designated as part of the NLCS in PL 111-11 are wilderness, wilderness study areas, National Scenic Trails, National Historic Trails, and National and Wild and Scenic Rivers. These NLCS lands are part of the LLPAs in the DRECP. PL 111-11 also directed BLM to designate public land within the CDCA administered for conservation purposes as part of the NLCS. The proposed NLCS lands are part of the BLM LUPA conservation designations in the Plan Area, and they may overlap ACECs or Wildlife Allocations. These areas are proposed as NCLs. The DRECP uses the terms and acronyms NLCS and NCL (National Conservation Lands) interchangeably; these proposed areas do not include the existing NLCS area, as designated by Congress.

natural communities. Natural communities are defined as assemblages of vegetation types and the plant and animal species that use those vegetation types as habitat. A natural community is generally characterized by similarities in the vegetation types and the natural ecological processes that dominate the community and give it its unique characteristics. Natural communities are included as a focus of DRECP conservation. For the purposes of mapping and characterization in the DRECP, natural communities are mapped within the National Vegetation Classification System hierarchy at the "group" level, which is finer-grained than the broad general community groupings but coarser than community "alliances."

NCCP Conceptual Plan-Wide Reserve Design. The planning envelope that defines the areas within which durable, long-term protection and management of lands for DRECP Covered Species is important for achieving the DRECP Plan-wide BGOs in a manner that is consistent the Natural Community Conservation Planning Act. The NCCP Conceptual Plan-Wide NCCP Reserve Design includes the LLPAs, Interagency Plan-Wide Conservation Priority Areas, and a portion of BLM Conservation Lands. Other NCCPs developed within the Plan Area in the future could also create or expand reserve areas within the NCCP Conceptual Plan-Wide Reserve Design. For additional detail on NCCP definitions, refer to Section II.3.3.

NCCP Reserve. LLPAs and lands within the DRECP NCCP Reserve Design that are added to the NCCP Reserve. A portion of the BLM Conservation Lands within the DRECP NCCP Reserve Design will be added to the DRECP NCCP Reserve by applying tools that provide durable, long-term assurances that the lands will be protected and managed for Covered Species. A portion of the private lands and nonfederal public lands within the DRECP NCCP Reserve Design will be added to the NCCP Reserve by purchasing them from willing sellers. All LLPAs by definition have durable, long-term protections and are included in the NCCP Reserve.

nonfederal lands. Land owned by state agencies, local jurisdictions (e.g., cities or counties), non-governmental organizations, or private citizens, or otherwise not under federal ownership or management. Incidental take resulting from Covered Activities on nonfederal lands will be authorized under the USFWS GCP and the DRECP NCCP.

no surface occupancy. A fluid mineral leasing stipulation that prohibits occupancy or disturbance on all or part of the lease surface to protect special values of uses. Lessees may explore for or exploit the fluid minerals under leases restricted by this stipulation by using directional drilling from sites outside the no surface occupancy area.

O

occupied habitat. Suitable habitat determined to be inhabited by a Covered Species based on the results of a habitat assessment and species-specific presence/absence or protocol surveys. This term is not applicable to wide-ranging large mammals with often poorly defined home ranges. For example, linkages may be typically unoccupied most of the time but nonetheless critical to population viability. In addition, the concept is not applicable to nomadic species, such as burro deer (*Odocoileus hemionus eremicus*), which opportunistically exploit flushes of new plant growth in response to unpredictable precipitation patterns. Thus, an area may not be used for many years because of a lack of summer thunderstorms, but then used heavily when it does rain in that area.

occurrences. Positive detections of specific species or natural community in an area, resulting from protocol or presence/absence surveys, generally confirmed by a qualified biologist.

Open Off-Highway Vehicle (OHV) Lands. Designations on BLM-administered lands where motorized and non-motorized uses, including cross-country travel, is permitted (generally referred to as Open Areas). Included as part of the Other Lands under the DRECP.

Open OHV Lands – Imperial Sand Dunes. Open OHV Lands within the approved Imperial Sand Dunes Recreation Area Management Plan (ISDRA). Included as part of the Other Lands under the DRECP.

Other Lands. This category of land is shown on DRECP maps and refers collectively to the following: impervious and urban built up lands (developed areas as per the DRECP land cover map), military lands, Open OHV Areas – Imperial Sand Dunes, Open OHV Areas, Johnson Valley OHV shared use area, and tribal lands. Other Lands are not considered for Covered Activities under the DRECP, but could be available for renewable energy development through other federal, state, tribal, or local approval processes. Other Lands are also not considered necessary for resource conservation in the context of the DRECP.

Though not depicted separately on DRECP maps, this category also refers to BLM lands with existing rights-of-way and easements previously committed to nonrenewable energy-related uses, Bureau of Reclamation fee and withdrawn lands, lands withdrawn from BLM surface management by other agencies or other purposes, and other ownerships not participating in DRECP (e.g., Metropolitan Water District, Los Angeles Department of Water and Power).

P

permittee. The entities that receive permits from the Wildlife Agencies under Section 2835 of the Natural Community Conservation Planning Act, Section 10 of the federal Endangered Species Act, and/or the Bald and Golden Eagle Protection Act, as appropriate.

Plan Area. The geographic area of the DRECP as defined in the Planning Agreement, which includes areas proposed for Covered Activities, areas in which conservation actions would occur, and Other Lands as depicted in Figure I.0-1 (see Chapter I.0).

Plan-Wide. The term used to clarify elements of the DRECP or analyses conducted for the DRECP that apply to all of the available lands within with the Plan Area. For example, the DRECP Plan-wide BGOs are BGOs that apply across the entire Plan Area within available lands. The Plan-wide conservation analysis considers the entire Plan Area within available lands. This contrasts with elements of the DRECP or analyses that are specific to portions of the Plan Area (BLM LUPA , USFWS GCP, CDFW NCCP).

pre-construction survey. Surveys conducted prior to project site preparation and construction of Covered Activities to determine presence and distribution of Covered

Species, suitable habitat for Covered Species, and/or natural communities, as well as the need to implement applicable avoidance CMAs.

Preferred Alternative. Under NEPA, the Preferred Alternative is the alternative that best meets the purpose and need while giving consideration to environmental, social, economic and other factors. The Preferred Alternative must be considered equally with all other fully considered alternatives. There is no guarantee or assumption that the Preferred Alternative will be selected for implementation and the Preferred Alternative may change between the Draft and Final EIS. For CEQA analysis, the action alternative that is the project being analyzed.

presence/absence survey. A survey conducted during the planning phase of proposed projects to determine the presence/absence by a Covered Species, when a standard protocol survey for that species is not available, as specified in the species-specific CMAs. A presence/absence survey methodology would be approved by the DRECP Coordination Group. A presence/absence survey may replace a protocol survey in some other circumstances, depending on site conditions and/or timing of the survey (e.g., breeding season), with approval from the DRECP Coordination Group.

proposed Feinstein bill areas. Areas identified for conservation, recreation, and other purposes proposed in the California Desert Protection Act of 2011.

project area. The total land area affected by a Covered Activity, including the area directly and indirectly affected (equates to 7.1 acres/MW for solar development, 40 acres/MW for wind development, and 5 acres/MW for geothermal development).

project footprint. The area of permanent and temporary ground disturbance associated with the construction, operation, and maintenance of a Covered Activity, including associated linear components, such as access roads, gen-ties, other utility lines, etc. May also be considered synonymous with project site.

protocol survey. Species-specific surveys that are conducted under a protocol that has been adopted by the Wildlife Agency(ies) or is otherwise scientifically accepted for determining the occupancy or presence and absence of Covered Species. These surveys would be required as specified in the species-specific CMAs.

public land. Land or interest in land owned by the United States, State of California, or the counties, typically administered by a federal, state, or local agency.

R

Renewable Energy Action Team (REAT) agencies. The DRECP REAT comprises representatives from the California Energy Commission (CEC), California Department of

Fish and Wildlife (CDFW), Bureau of Land Management (BLM) and the U.S. Fish and Wildlife Service (USFWS).

S

setback. A defined distance, usually expressed in feet or miles, from a resource feature (such as the edge of a natural community or an occupied nest) within which construction and operations of Covered Activities (such as extension of a transmission line) would not occur; otherwise often referred to as a buffer. The purpose of the setback is to maintain the function and value of the biological resource features identified in the CMAs. See Section II.3.1.2.5 for a summary of setbacks incorporated in the CMAs.

Solar Energy Zones (SEZs). Zones of potential solar energy development on BLM-administered lands, established by the BLM Solar PEIS.

Solar PEIS variance lands. BLM-administered lands identified as variance lands in the BLM Solar PEIS Record of Decision that are potential development areas under the No Action Alternative and Alternative 4.

solar project. Covered Activities that involve the construction, operation, and maintenance of a facility that generates energy from sunlight, including photovoltaic panels and thermal systems that convert the heat from sunlight into steam. Solar projects may include up to several acres of photovoltaic or mirror panel arrays, a thermal tower, access roads, maintenance facilities, generators, foundations, and transformers, or other supporting infrastructure.

Special Analysis Areas (SAAs). An interim category used in certain DRECP alternatives to represent areas subject to ongoing analysis to inform the designation that is expected to be made for the areas prior to the signing of a NEPA Record of Decision(s) and CEQA certification for the DRECP. The SAAs are known to have high value for renewable energy development and high value for ecological and cultural conservation, and recreation. Following further analysis, the SAAs would be designated as either DFAs or included in the DRECP Plan-Wide Reserve Design Envelope in the Final EIS for the DRECP. Covered Activities in SAAs could be permitted for NCCP purposes only through an NCCP plan amendment. In the absence of an NCCP plan amendment, any renewable energy development in an SAA would have to be permitted for state purposes under the California Endangered Species Act not the Natural Community Conservation Planning Act. If these areas are not allocated as DFAs or included in the reserve design envelope in the Record of Decision, where they occur on federal public lands, these areas would default to DRECP Variance Lands and would be subject to those requirements.

Special Recreation Management Area (SRMA). Designation on BLM-administered lands that are managed specifically to be high-priority areas for outdoor recreation defined in the BLM Land Use Planning Handbook H-1601-1 (2005). It is a public lands unit identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific structured recreation opportunities (i.e., activity, experience, and benefit opportunities). Both land use plan decisions and subsequent implementing actions for recreation in each SRMA are geared to a strategically identified primary market—destination, community, or undeveloped areas.

special-status species—BLM. BLM designation that includes proposed species, listed species, and candidate species under the federal Endangered Species Act of 1973, as amended; state-listed, candidate, and fully protected species; and BLM State Director-designated sensitive species. See BLM Manual 6840, Special Status Species Policy, for more detail.

species of special concern—CDFW. A CDFW designation for species, subspecies, or distinct population segments that are extirpated from the state in their season or breeding role, meet the definition of threatened or endangered but are not listed, are experiencing population declines or range detraction, have naturally small populations with high risk factors, and/or are otherwise susceptible to becoming listed if current conditions continue.

Step-Down Biological Objectives. The DRECP Step-Down Biological Objectives express how implementation of the DRECP would contribute toward meeting the DRECP Plan-wide BGOs. The Step-Down Biological Objectives describe the desired conservation and targeted conditions of implementing the DRECP and resulting contribution to meeting the DRECP Plan-wide BGOs in terms of:

- Desired conservation within the DRECP Plan-Wide Reserve Design Envelope, including conservation in existing conservation areas, BLM LUPA conservation designations on BLM-administered lands, and non-BLM lands added to the DRECP Conservation Area through DRECP implementation.
- Desired avoidance and minimization that would be implemented under the DRECP Plan-Wide Conservation Strategy.
- Monitoring and adaptive management activities that would be implemented under the DRECP Plan-Wide Conservation Strategy.

stressors. Physical, chemical, or biological factors (or conditions) that affect biological resources, including Covered Species or their suitable habitat, natural communities, and/or important ecosystem processes. The precise contribution of each stressor to a species' population may be uncertain, including which stressors have the greatest effect. In many cases stressors interact, and a combination of various stressors may affect a species.

Study Area Lands. Collectively the Special Analysis Areas (SAAs), Future Assessment Areas (FAAs), and DRECP Variance Lands (Solar PEIS Variance Lands in Alternative 4).

suitable habitat. Covered Species modeled habitat as determined by the DRECP species distribution models and confirmed or refined (i.e., expanded or reduced) by project-level habitat assessment and that require site-specific protocol or presence/absence surveys as specified in the species-specific CMAs. Suitable habitat consists of land within a Covered Species range that has, in the case of wildlife, breeding and foraging habitat characteristics required by the Covered Species, or in the case of plants, vegetation and microhabitat characteristics consistent with known occurrences, as determined by the habitat assessment.

T

transmission project. Covered Activities that involve the construction, operation, and maintenance of a transmission line, including step-up transformers, towers, and substations, but generally consisting of a linear type of disturbance.

Transmission Technical Group (TTG). An independent technical advisory group that assists with transmission planning for the DRECP.

Travel Management Areas. On BLM-administered land, polygons or delineated areas where a rational approach has been taken to classify areas as open, closed, or limited, and which have an identified and/or designated network of roads, trails, ways, and/or other routes that provide for public access and travel across the LUPA Planning Area.

tribal lands. Those lands that constitute "Indian Country" within the meaning of Title 18 United States Code Section 1151. Included as part of the Other Lands that are unavailable under the DRECP.

U

unavoidable impacts to resources. As applied to Covered Activities, refers to any small-scale impacts to Covered Species, natural communities, and nonbiological resources that may occur even after such impacts have been avoided to the maximum extent practicable. Unavoidable impacts are limited to minor intrusions to biological resources, such as a necessary road or pipeline extension across a sensitive resource required to serve a project, and do not rise to a level of significance that warrants development and application of more rigorous CMAs. Design features will be incorporated in such project elements to minimize effects on the functions and values of biological resources to the maximum extent practicable as determined by the DRECP Coordination Group. Compensation for unavoidable impacts would be required as specified in the DRECP CMAs. The term "maximum extent practicable" as used here is applicable only to the term as it is used in the

CMAs; it does not apply to the term as it is used in the Endangered Species Act incidental take issuance criteria.

undesignated lands (also referred to as BLM unallocated lands). BLM-administered lands that do not have an existing or proposed land allocation or designation. These areas would be open to renewable energy applications but would not benefit from the streamlining or CMA certainty of the DFAs. These lands are not needed to fulfill the DRECP biological conservation strategy.

USFWS Birds of Conservation Concern (BCC). Species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the federal Endangered Species Act.

V

valid existing rights. A documented, legal right or interest in the land that allows a person or entity to use said land for a specific purpose. Such rights include fee title ownership, mineral rights, rights-of-way, easements, permits, licenses, etc. Such rights may have been reserved, acquired, leased, granted, permitted, or otherwise authorized over time.

Variance Lands. Refer to DRECP Variance Lands definition above.

Visual Resource Management (VRM) Classes. BLM categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes, I–IV. Each class has an objective that prescribes the amount of change allowed in the characteristic landscape. See Chapter III.20, Table III.20-2, for the class descriptions.

W

Wildlife Agencies. For purposes of the DRECP, the CDFW and USFWS.

Wildlife Allocation. BLM conservation designation on BLM-administered lands where management emphasizes wildlife values. A Wildlife Allocation may be part of an NLCS unit.

wind project. Covered Activities that involve the construction, operation, and maintenance of a facility that generates energy from wind, using an array of turbines to capture and convert the wind energy to electricity. Wind projects may include up to several acres of turbines and foundations, access roads, maintenance facilities, generators, and transformers.

Literature Cited

CEC (California Energy Commission). 2012. *2011 Integrated Energy Policy Report.* CEC-100-2011-001-CMF.

Gucker, Corey L. 2006. "*Yucca schidigera*." Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Accessed December 12, 2013. http://www.fs.fed.us/database/feis/.

LaPre, Lawrence Franklin. 1979. "Physiological Ecology of *Yucca schidigera*." PhD dissertation; University of California, Riverside.

Mojavedesert.net 2013. "Yucca Clone Rings." Accessed December 12, 2013. http://mojavedesert.net/plants/yucca-rings.html.

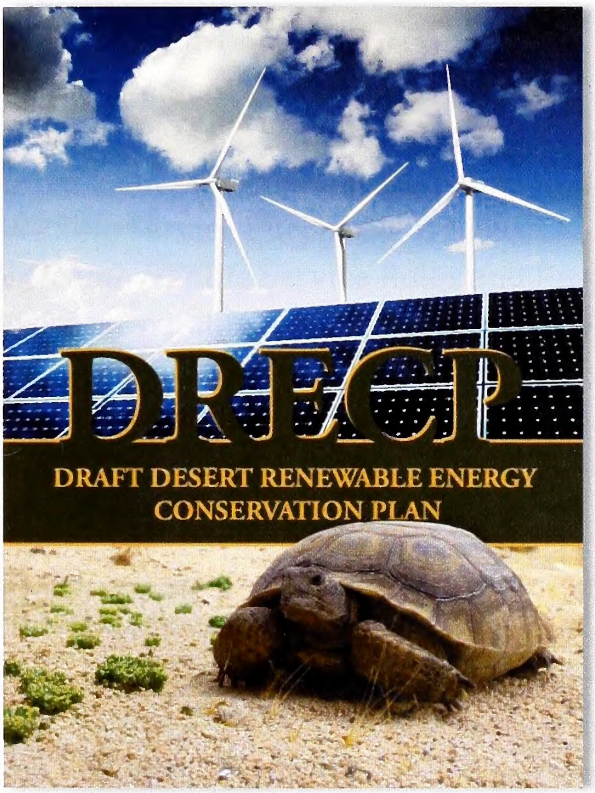
Vasek, F.C. 1980. "Creosote Bush: Long-Lived Clones in the Mojave Desert." *American Journal of Botany* 67:246–255.

Volume I

DRAFT

Desert Renewable Energy Conservation Plan (DRECP) and Environmental Impact Report/Environmental Impact Statement

Volume I: Background and Planning Process



Prepared by:

California Energy Commission

California Department of Fish and Wildlife

U.S. Bureau of Land Management

U.S. Fish and Wildlife Service

SEPTEMBER 2014

Printed on 30% post-consumer recycled material.

TABLE OF CONTENTS – VOLUME I

Section **Page No.**

I.0 INTRODUCTION I.0-1
I.0.1 Document Organization I.0-1
I.0.2 Requirement for Further Analysis I.0-7
I.0.3 Project Background and Overview I.0-7
I.0.3.1 Plan Area I.0-15

I.1 OBJECTIVES/PURPOSE AND NEED I.1-1
I.1.1 Interagency Objectives/Purpose and Need I.1-1
I.1.2 Bureau of Land Management Purpose and Need I.1-1
I.1.2.1 Bureau of Land Management Roles and Responsibilities I.1-3
I.1.2.2 Bureau of Land Management Decisions to Be Made I.1-5
I.1.3 U.S. Fish and Wildlife Service Purpose and Need I.1-6
I.1.3.1 U.S. Fish and Wildlife Service Roles and Responsibilities I.1-7
I.1.3.2 U.S. Fish and Wildlife Service Decisions to Be Made I.1-8
I.1.4 State Objectives I.1-9
I.1.4.1 California Energy Commission I.1-10
I.1.4.2 California Department of Fish and Wildlife I.1-11
I.1.4.3 California State Lands Commission I.1-13

I.2 LEGAL FRAMEWORK I.2-1
I.2.1 Bureau of Land Management I.2-1
I.2.1.1 Federal Land Policy and Management Act I.2-1
I.2.1.2 National Environmental Policy Act I.2-5
I.2.1.3 Federal Endangered Species Act of 1973 ..... I.2-5
I.2.1.4 National Historic Preservation Act of 1966 ..... I.2-7
I.2.1.5 Omnibus Public Land Management Act of 2009 ..... I.2-8
I.2.1.6 Other Relevant Federal Authorities I.2-8
I.2.1.7 Renewable Energy Laws and Other Relevant Policies I.2-15
I.2.2 U.S. Fish and Wildlife Service I.2-20
I.2.2.1 Federal Endangered Species Act I.2-20
I.2.2.2 National Environmental Policy Act I.2-23
I.2.2.3 Migratory Bird Treaty Act I.2-24
I.2.2.4 Bald and Golden Eagle Protection Act of 1940, as Amended I.2-24
I.2.2.5 National Historic Preservation Act I.2-26
I.2.3 California Energy Commission I.2-26
I.2.3.1 California Environmental Quality Act I.2-26
I.2.3.2 Warren-Alquist Act I.2-27

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

I.2.4 California Department of Fish and Wildlife I.2-28
I.2.4.1 California Endangered Species Act I.2-28
I.2.4.2 Natural Community Conservation Planning Act I.2-29
I.2.4.3 Lake and Streambed Alteration Agreement I.2-32
I.2.4.4 Other Wildlife Protection Regulations and Statutes I.2-32
I.2.5 California State Lands Commission I.2-34
I.2.5.1 School Land Bank Act of 1984 ..... I.2-34
I.2.5.2 Sovereign Land Jurisdiction I.2-34
I.2.5.3 State Mineral Resources I.2-35
I.2.5.4 Geothermal Resource Jurisdiction I.2-35

I.3 PLANNING PROCESS I.3-1
I.3.1 Bureau of Land Management Land Use Planning Process I.3-1
I.3.1.1 Planning Criteria I.3-1
I.3.1.2 Types of Land Use Plan Decisions I.3-3
I.3.1.3 Site-Specific Implementation Decisions and Requirements for Further Environmental Analysis I.3-4
I.3.1.4 Integration with the Conservation Planning Process I.3-4
I.3.2 Natural Community Conservation Plan Planning Process I.3-5
I.3.2.1 Approach to the NCCP Conceptual Plan-Wide Reserve Design I.3-5
I.3.2.2 Approach to the DRECP NCCP Reserve Design I.3-9
I.3.3 General Conservation Plan Planning Process I.3-9
I.3.4 DRECP Biological Conservation Planning Process I.3-10
I.3.4.1 Establish the Biological Conservation Focus I.3-11
I.3.4.2 Gather Baseline Biological Information I.3-17
I.3.4.3 Identify Biological Goals and Objectives I.3-18
I.3.4.4 Develop Reserve Design I.3-21
I.3.4.5 Develop Conservation and Management Actions I.3-29
I.3.4.6 Develop Monitoring and Adaptive Management Program I.3-30
I.3.5 Renewable Energy Goals and Planning Process I.3-30
I.3.5.1 Federal/BLM Renewable Energy Goals I.3-30
I.3.5.2 California's Renewable Energy Requirements and Energy Goals I.3-33
I.3.5.3 Overview of the Renewable Energy Planning Process and Development Focus Area Design Process I.3-36
I.3.5.4 Estimating the Quantity of Renewable Energy Generation Within the Plan Area I.3-43

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

I.3.5.5 Renewable Energy Resource Distribution and Development Potential I.3-53
I.3.5.6 Identification of Development Focus Areas I.3-55
I.3.5.7 Transmission Planning Goals and Assumptions I.3-58
I.3.6 Plan Integration I.3-61
I.3.6.1 BLM Land Use Planning Designations I.3-61
I.3.6.2 Biological Conservation Planning I.3-62
I.3.6.3 Renewable Energy Planning Areas I.3-62
I.3.7 Duration of the DRECP I.3-64
I.3.7.1 Bureau of Land Management Land Use Plan Amendment I.3-64
I.3.7.2 Endangered Species Act Incidental Take Permit Duration I.3-64
I.3.7.3 Natural Community Conservation Plan Duration I.3-64

I.4 LITERATURE CITED – VOLUME I I.4-1
Chapter I.0 Introduction I.4-1
Chapter I.1 Objectives/Purpose and Need I.4-1
Chapter I.2 Legal Framework I.4-3
Chapter I.3 Planning Process I.4-7

TABLE OF CONTENTS (CONTINUED)

Page No.

FIGURES

I.0-1 DRECP Plan Area I.0-3
I.0-2 Land Use Plan Amendment Lands I.0-9
I.0-3 Natural Community Conservation Plan Lands I.0-11
I.0-4 General Conservation Plan Lands I.0-13
I.3-1 Reserve Design Envelope I.3-31

TABLES

I.3-1 Proposed Covered Species List I.3-13
I.3-2 Covered Species List Revisions Since 2013 ..... I.3-15
I.3-3 Natural Communities List I.3-16
I.3-4 Acreage Requirements per Megawatt of Generation Capacity I.3-52

EXHIBITS

I.3-1a DRECP and NCCP Reserve Design Concepts and Definitions I.3-7
I.3-1b DRECP and NCCP Reserve Design Durability Concepts I.3-8
I.3-2 DRECP Reserve Design Process I.3-23
I.3-3 DRECP Plan Integration Process I.3-63

ACRONYM LIST

ACEC	Area of Critical Environmental Concern
BGOs	Biological Goals and Objectives
BLM	Bureau of Land Management
CalWEA	California Wind Energy Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CDCA	California Desert Conservation Area
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEERT	Center for Energy Efficiency and Renewable Technologies
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CMAs	Conservation and Management Actions
CPUC	California Public Utilities Commission
CSLC	California State Lands Commission
DFAs	Development Focus Areas
DOD	Department of Defense
DOI	Department of the Interior
DRECP	Desert Renewable Energy Conservation Plan
DWMA	Desert Wildlife Management Area
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
GCP	General Conservation Plan
GHG	greenhouse gas
GIS	geographic information system
HCP	Habitat Conservation Plan
ISA	Independent Science Advisors
ISP	Independent Science Panel
LLPAs	Legislatively and Legally Protected Areas
LSA	Large-Scale Solar Association
LUPA	Land Use Plan Amendment
MAMP	Monitoring and Adaptive Management Program
MBTA	Migratory Bird Treaty Act
MEMLs	Military Expansion Mitigation Lands
MW	megawatt
NCCP	Natural Community Conservation Plan

NCCPA	Natural Community Conservation Planning Act
NEPA	National Environmental Policy Act
NLCS	National Landscape Conservation System
NREL	National Renewable Energy Laboratory
OHV	off-highway vehicle
PA	Programmatic Agreement
PEIS	Programmatic Environmental Impact Statement
Plan	Desert Renewable Energy Conservation Plan
REAT	Renewable Energy Action Team
RESA	Renewable Energy Study Area
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
RPS	Renewables Portfolio Standard
SO	Secretarial Order
TTG	Transmission Technical Group
U.S.C.	United States Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

I.0 INTRODUCTION

I.0.1 Document Organization

The Desert Renewable Energy Conservation Plan (DRECP or Plan) is a comprehensive plan that provides for renewable energy and transmission development projects and for the conservation of sensitive species and ecosystems in California's Mojave and Colorado/Sonoran deserts. The Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), California Energy Commission (CEC), and California Department of Fish and Wildlife (CDFW) must determine whether to approve proposed components of the DRECP. The Renewable Energy Action Team (REAT), composed of members from these agencies, collaborated to develop the DRECP and focus on renewable energy and natural resource conservation in the desert region. The DRECP is described in more detail in Section I.0.3.

This document, the Draft DRECP and Environmental Impact Report/Environmental Impact Statement (EIR/EIS), addresses how federal and state governmental agencies with jurisdiction over renewable energy and transmission development projects in California's desert regions propose to (1) manage public lands for species and habitat values under the Federal Land Policy and Management Act (FLPMA) and protect species from take and species' critical habitat from adverse modification under the federal Endangered Species Act (ESA), and (2) conserve natural communities and species pursuant to the ESA and the California Natural Community Conservation Planning Act (NCCPA).

The REAT set forth these primary goals for the DRECP:

- To contribute to the conservation (recovery) of Covered Species (see Section I.3.4, DRECP Biological Conservation Planning Process), habitats, and natural communities, as well as to the physical, visual, cultural, and social resources in the Plan Area (see Figure I.0-1)
- To streamline future permitting efforts for the development of renewable energy in the Plan Area to help meet California's Renewables Portfolio Standard (RPS), California's greenhouse gas emission reduction targets, and other state and federal renewable energy and transmission goals

The renewable energy and transmission development and the conservation actions, which comprise the Covered Activities, are detailed in Volume II, Description of Alternatives.

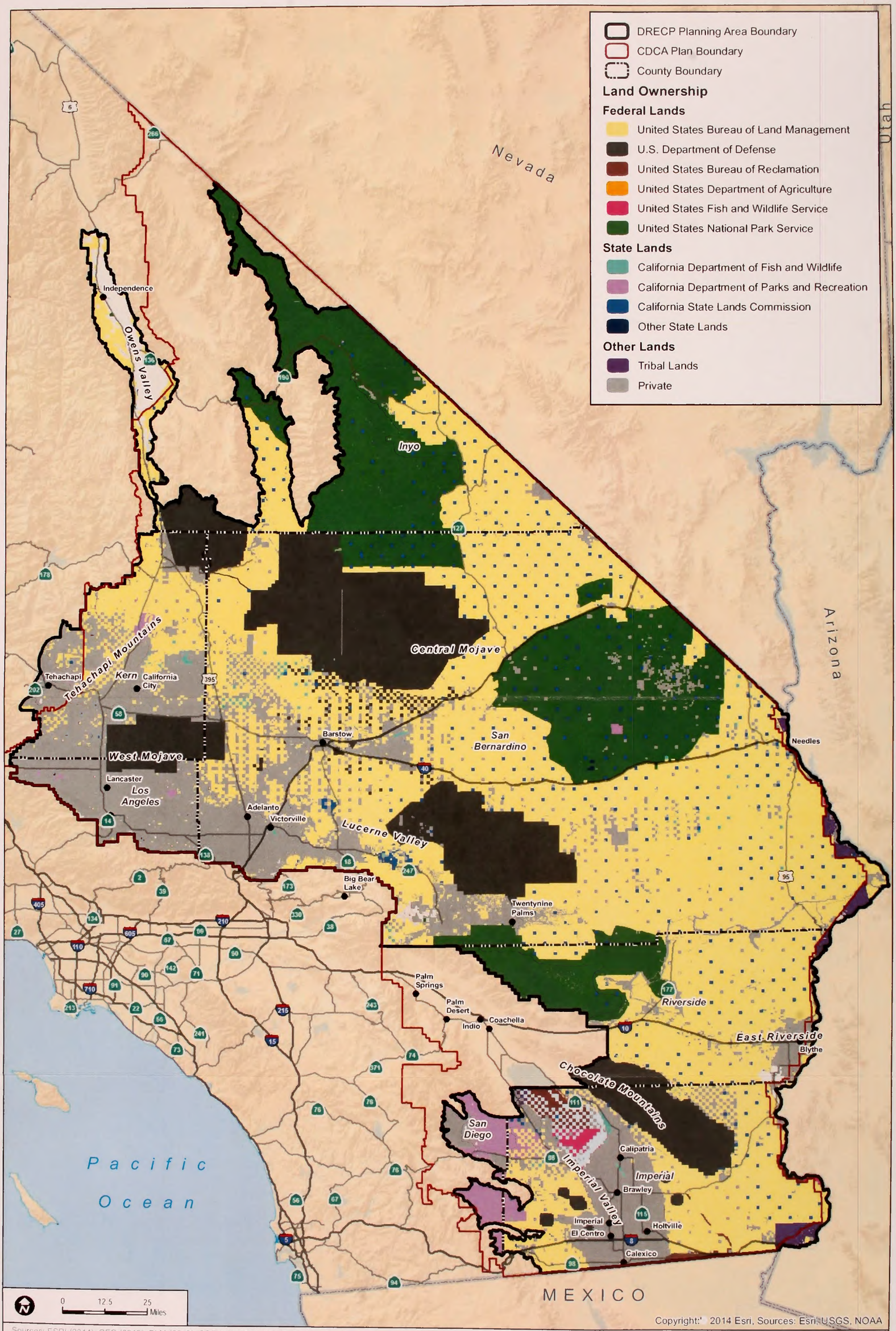
The DRECP and EIR/EIS is a combined programmatic document that includes all required elements of the proposed BLM Land Use Plan Amendment (LUPA), a proposed Natural Community Conservation Plan (NCCP), and a proposed General Conservation Plan (GCP), as well as all required analyses under the California Environmental Quality Act (CEQA) and

National Environmental Policy Act (NEPA). For complete descriptions of the LUPA, NCCP, and GCP components under each alternative, see Volume II.

The USFWS and BLM are the federal co-lead agencies for preparation of the EIS element of the DRECP and EIR/EIS. The USFWS will consider approval of the GCP, and BLM will consider approval of the LUPA.

CDFW will consider approval of the NCCP. CEC is the state lead agency for preparation of the EIR. The California State Lands Commission (CSLC), because of its land ownership and management responsibilities of state lands in the Plan Area, intends to be an applicant under the GCP and a plan participant under the NCCP. The CSLC and BLM, through a May 2012 Memorandum of Agreement, also established a land-exchange process to consolidate the respective agencies' land ownership in the Plan Area.

In addition, a DRECP Stakeholder Committee, whose members were appointed by the DRECP Director, was established to inform the REAT agencies on the development of the DRECP and EIR/EIS and to provide a forum for public participation and input. The Stakeholder Committee was composed of individuals from local governments, environmental organizations, electric utilities, renewable energy industry associations, renewable energy project developers, a coalition of Native American tribes, and off-highway vehicle associations. Federal and state agencies also participated in 22 Stakeholder Committee meetings from March 2009 to July 2012. See Appendix A for a complete list of the Stakeholder Committee members and Volume V for more information on consultation and public involvement.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE I.0-1
DRECP Plan Area

INTENTIONALLY LEFT BLANK

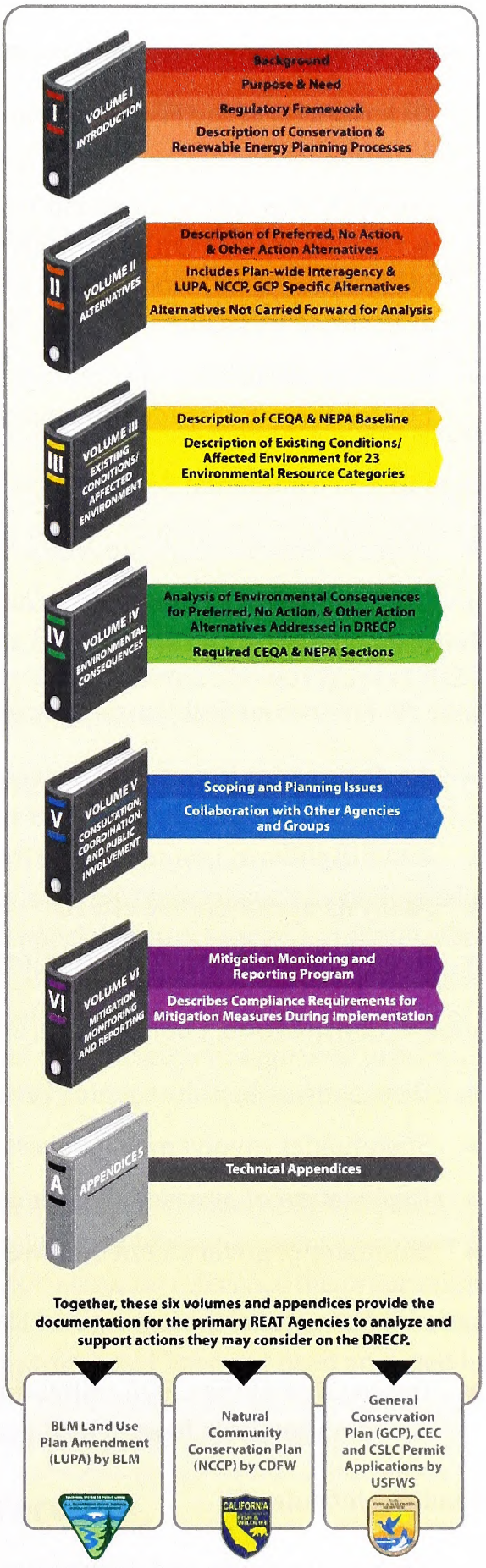
The EIR/EIS elements of this combined programmatic document evaluate the potential environmental, cultural, social, and scenic effects of the agencies' Preferred Alternative[1] and other alternatives in accordance with CEQA (California Public Resources Code, Section 21000 et seq.). This document follows the CEQA Guidelines (14 California Code of Regulations [CCR] 15000 et seq.), NEPA (42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality's (CEQ's) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] 1500 et seq.), the Department of the Interior's regulations for implementing NEPA (43 CFR Part 46), and guidelines from other applicable federal and state authorities.

The DRECP and EIR/EIS comprises six volumes (plus appendices) that address the multiple actions to be taken by the agencies to describe the proposed project, analyze the potential impacts, and implement the DRECP, including public involvement and CEQA mitigation reporting and monitoring.

The DRECP and EIR/EIS document is organized in the following manner.

Volume I, Background and Planning Process, includes:

- Introduction
- Objectives and purpose and need
- Regulatory framework
- Descriptions of conservation, renewable energy, and transmission planning processes



[1] The Preferred Alternative constitutes the proposed project as defined under CEQA.

Volume II, Description of Alternatives, includes:

- Descriptions of the Preferred Alternative, No Action Alternative, and Alternatives 1 through 4
- For each alternative, a description of the combined elements for all REAT agencies across the entire Plan Area (referred to as the interagency or Plan-wide description of the alternative) along with a description of agency-specific elements of the alternative including the LUPA, NCCP, and GCP
- Descriptions of other alternatives considered and descriptions of alternatives not carried forward for further analysis

Volume III, Environmental Setting/Affected Environment, includes:

- Descriptions of CEQA and NEPA baselines
- Descriptions of existing conditions and affected environment for 23 environmental, cultural, social, and scenic resource categories addressed in the DRECP and EIR/EIS

Volume IV, Environmental Consequences/Effects Analysis, includes:

- Analysis of environmental consequences for 23 environmental, cultural, social, and scenic resource categories—for each alternative—addressed in detail in the DRECP and EIR/EIS
- Analysis of cumulative effects
- Required CEQA and NEPA sections

Volume V, Consultation, Coordination, and Public Participation, includes:

- Description of public scoping process and summary of issues raised in scoping
- Stakeholder involvement process
- Explanation of interaction with other agencies
- Summary of government-to-government consultations with Native American tribes

Volume VI, Mitigation Monitoring and Reporting Plan, includes:

- Description of the CEQA mitigation monitoring requirements, including coordination with federal lead agencies

Appendices include:

- Technical reports and documentation
- Implementation agreement(s)

- Cost and funding analysis
- Supporting documentation for LUPA-, NCCP-, and GCP-specific elements of the DRECP
- The reserve design process, approach to compensation, and more

These six volumes and appendices analyze, disclose, and provide the necessary documentation for the REAT agencies to analyze and support certain proposed DRECP actions they may consider as part of the DRECP and EIR/EIS. These actions include:

- LUPA by BLM
- NCCP by CDFW, including execution of an implementation agreement and issuance of a Section 2835 permit to CSLC
- GCP by USFWS (i.e., programmatic Habitat Conservation Plan), including CEC and CSLC applications under the GCP

The DRECP and EIR/EIS provides a comprehensive Plan-wide analysis of each alternative, as well as separate analyses of the potential agency actions noted above. Figures I.0-2, I.0-3, and I.0-4 identify the plan areas addressed for each of these actions.

I.0.2 Requirement for Further Analysis

The EIR/EIS elements of this combined CEQA and NEPA document provide a programmatic-level analysis of impacts on the human environment such as biological resources (including but not limited to impacts on special-status species), cultural, social, scenic, and other environmental resources. Renewable energy and transmission projects covered by the DRECP and EIR/EIS will require project-level environmental review of site-specific impacts on resources as a necessary part of the subsequent approval process. The REAT agencies anticipate that subsequent site-specific environmental analysis for these projects would tier from the DRECP and EIR/EIS.

Tiering is the process of using the analysis of general matters in broader CEQA or NEPA analyses, such as the DRECP and EIR/EIS, in the development of a subsequent, narrower CEQA or NEPA document. The subsequent analysis will incorporate by reference the programmatic environmental analysis from the broader CEQA or NEPA document and concentrate solely on the site-specific issues identified for the subsequent project that have not been analyzed in the programmatic CEQA or NEPA document (e.g., 40 CFR 1508.28; 43 CFR 46.140; California Public Resources Code, Section 21093–21094; and 14 CCR 15152 and 15169).

I.0.3 Project Background and Overview

The DRECP and EIR/EIS were developed to (1) advance federal and state natural resource conservation goals and other federal land management goals; (2) meet the requirements of

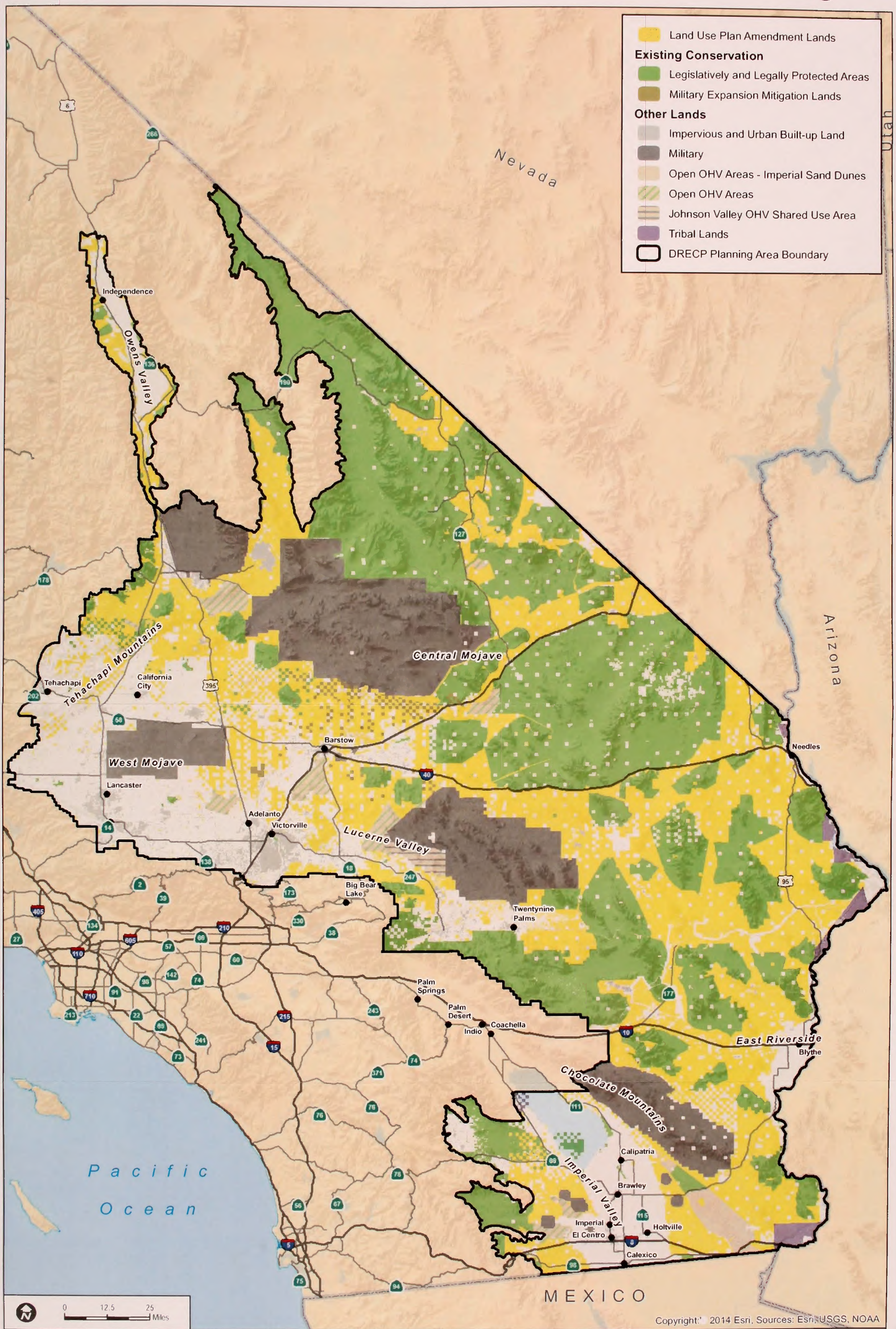
the ESA, California Environmental Endangered Species Act (CESA), NCCPA, and FLPMA in the Mojave and Colorado/Sonoran desert regions of Southern California; and (3) facilitate the timely and streamlined permitting of renewable energy projects. Appendix A provides a chronological summary of federal and state agreements and actions taken to initiate development of the DRECP and EIR/EIS.

The DRECP includes a strategy that identifies and maps areas for renewable energy development and areas for long-term natural resource conservation. The following describes how the DRECP combines a LUPA, NCCP, GCP, and EIR/EIS.

Pursuant to 43 CFR 1610.5-5, the DRECP is intended to serve as a BLM LUPA, which would amend the California Desert Conservation Area (CDCA) Plan as well as the Bishop and Bakersfield Resource Management Plans (RMPs), specifically related to natural resource conservation and renewable energy development. In addition, on BLM-administered land, the BLM will use the DRECP and EIR/EIS as a programmatic-level planning document to support supplemental area-specific and site-specific project analysis, including ESA Section 7 consultation (see Section I.1.2.2, USFWS Decisions to Be Made).

With regard to the ESA and NCCPA, the DRECP is structured to serve as a programmatic GCP and NCCP, respectively, as described in Section I.0.3.1.2. Commensurate with the DRECP conservation strategy, the USFWS and CDFW may also provide federal and state take authorizations and regulatory assurances, under the ESA and NCCPA respectively, to facilitate the development of renewable energy resources in the Plan Area.

The CEC intends to use the DRECP in its review of desert-area projects under the Warren-Alquist Act. The CEC will apply to the USFWS for a federal incidental take permit under the GCP for CEC-approved projects that are located on private land and approved under the DRECP (see Appendix M for the CEC's GCP Permit Application). In addition, if CDFW approves the DRECP as an NCCP, CEC will be able to provide state incidental take authorization for CEC-approved projects that are on private and federal land that are covered by the DRECP.

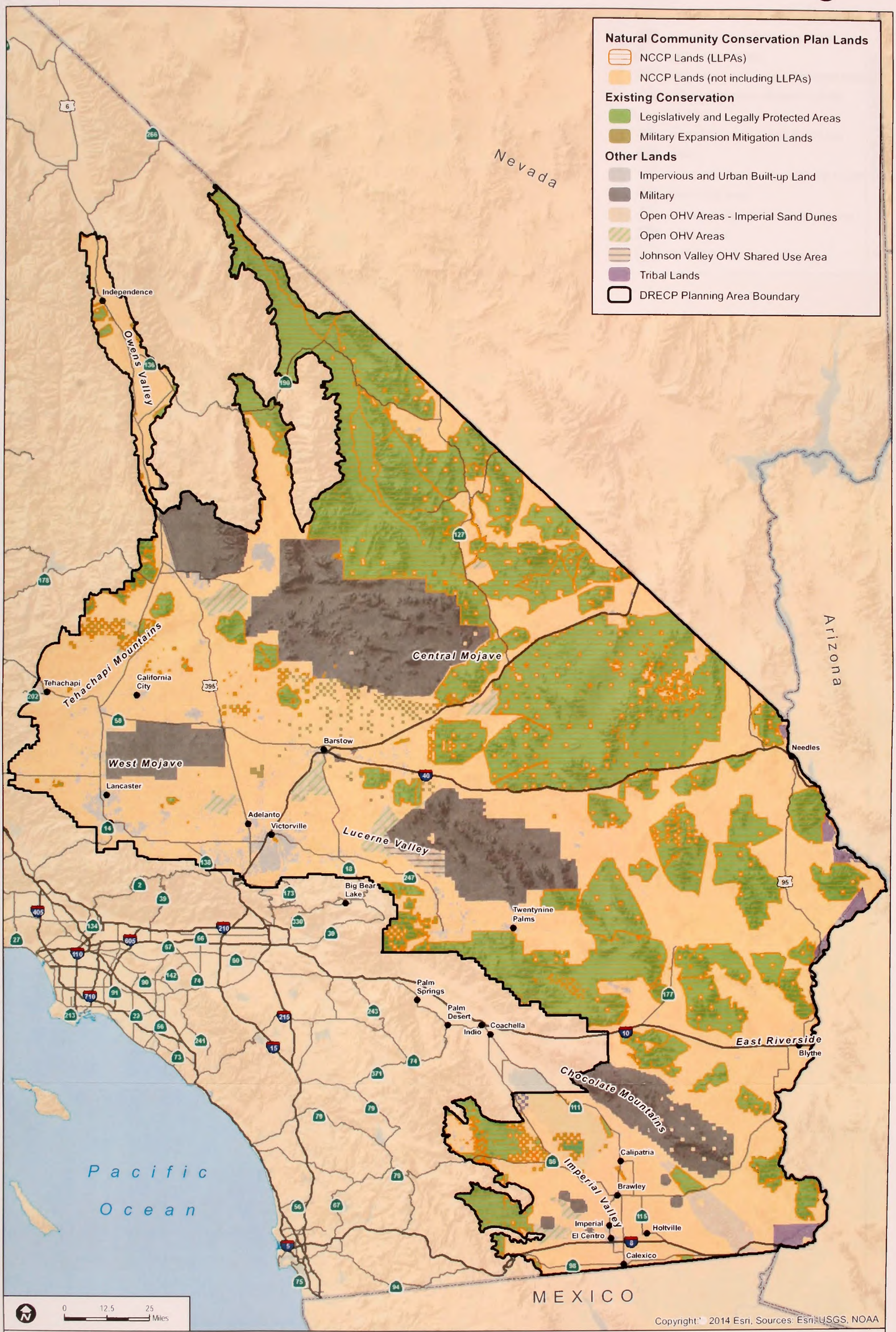


Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE I.0-2

Land Use Plan Amendment Lands

INTENTIONALLY LEFT BLANK

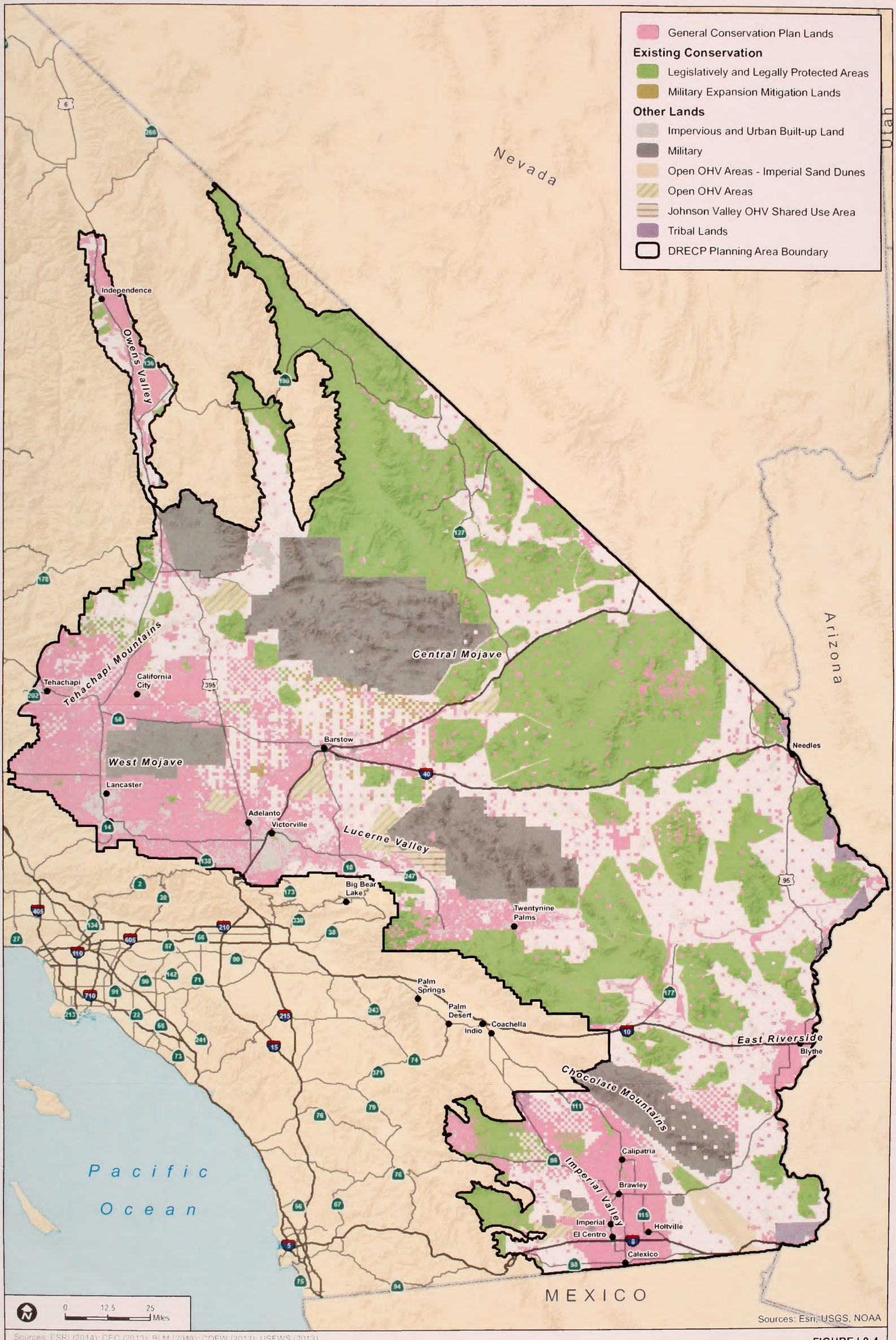


Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE I.0-3

Natural Community Conservation Plan Lands

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE I.0-4

General Conservation Plan Lands

INTENTIONALLY LEFT BLANK

The USFWS will consider issuance of Section 10(a)(1)(B) permits to individual applicants, local jurisdictions, or state agencies that apply for incidental take authorization for renewable energy projects on nonfederal lands that are consistent with the USFWS proposed GCP. CEC and CSLC are applying under the GCP for the incidental take of Covered Species associated with project proposals under their respective jurisdiction or land ownership on nonfederal lands in the Plan Area. In addition, the USFWS is considering the issuance of take permits for golden eagles (*Aquila chrysaetos*) under the regulatory provisions of the Bald and Golden Eagle Protection Act in conjunction with renewable energy development on both federal and nonfederal lands within the Plan Area. As part of its approval of the DRECP, the USFWS may issue permits for the incidental take of Covered Species that are federally listed endangered, threatened, and special-status animal species (Covered Species) on nonfederal land.

Similarly, upon approval and adoption of the DRECP as an NCCP, CDFW may issue to the CSLC and state or local agencies one or more authorizations for the incidental take of Covered Species. In addition, CDFW, CEC, and any agency holding an NCCP take permit from CDFW may authorize incidental take by private developers under state law for projects carried out under the DRECP.

The National Park Service, Environmental Protection Agency, Department of Defense, California Public Utilities Commission, California State Parks, and California Independent System Operator are assisting in the preparation of the DRECP, but none of these agencies is an applicant for state or federal take authorizations at this time. Likewise, the City of Lancaster and all seven counties listed below with jurisdiction over land within the Plan Area have provided—as members of the DRECP Stakeholder Committee—comments during the development of the DRECP; however, to date, none has become an applicant for federal or state take authorizations.

I.0.3.1 Plan Area

The Plan Area (see Figure I.0-1) encompasses the Mojave Desert and Colorado/Sonoran Desert ecoregion subareas in California. The Plan Area includes all or a portion of the following counties: Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, and San Diego. The Plan Area covers approximately 22,585,000 acres.

The northern boundary of the Plan Area follows the lower elevations of the Owens Valley, Amargosa Valley, and Death Valley in Inyo County. The eastern Plan Area boundary follows the state border from the Funeral Mountains in Inyo County to the U.S.–Mexico border. The southern Plan Area boundary follows the U.S.–Mexico border to southwestern Imperial County. The southwestern Plan Area boundary follows the lower elevations of western Imperial and eastern San Diego counties to include the Colorado/Sonoran Desert portions of these counties. In Riverside County, the western Plan Area boundary follows the eastern

edge of the Coachella Valley Multiple Species Habitat Conservation Plan Area. This approved plan was not included in the Plan Area because it already covers construction of renewable energy projects, and the DRECP would be largely redundant.

In San Bernardino and Los Angeles counties, the Plan Area boundary follows the northern edge of lands managed by the U.S. Forest Service (USFS), including the San Bernardino, Angeles, and Los Padres national forests. National Forest lands approximate the ecoregion subarea boundary between the Mojave and South Coast ecoregion subareas, whose natural communities and species are very different from the desert ecoregion subarea of the Plan Area. Because USFS lands are a nondesert ecoregion subarea, USFS lands are not included in the Plan Area. In areas where the USFS ownership boundary is discontinuous and where this boundary abuts the BLM CDCA Plan boundary, the CDCA Plan boundary is used.

In the Tehachapi Mountains and southern Sierra Nevada Range of eastern Kern County, the Plan Area does not include land under Tejon Ranch ownership in the Tehachapi area because renewable energy development is explicitly prohibited on most of these lands, in accordance with the Tejon Ranch Conservation and Land Use Agreement (June 2008), and the terms of conservation easements held by the State of California on 62,000 acres of Tejon Ranch. In addition, small areas of land managed by the USFS in Kern and Inyo counties were not included in the Plan Area because USFS is not a participating agency in the DRECP.

I.0.3.1.1 BLM Land Use Plan Amendment

The BLM LUPA lands, depicted in Figure I.0-2, would apply within the Plan Area to BLM lands covered by the CDCA Plan as well as the Bakersfield and Bishop RMPs. The LUPA would also identify lands for inclusion in National Landscape Conservation System in those portions of the CDCA outside the Plan Area, in accordance with the Omnibus Public Lands Management Act, and establish Visual Resource Management classes and land use allocations outside the Plan Area but within the CDCA. The BLM LUPA would not include the Colorado River Corridor, which is under the management of the BLM–Arizona State Office.

I.0.3.1.2 DRECP Permit Areas

The Plan Area encompasses different permit areas for the NCCP and GCP.

Natural Community Conservation Plan Area

The proposed NCCP Area covers the entire Plan Area, with the exception of Other Lands[2] (see Figure I.0-3), and does include BLM lands within the Plan Area.

[2] Other Lands include military lands, tribal lands, and BLM Open OHV areas within the overall boundaries of the Plan Area.

General Conservation Plan Permit Area

The proposed GCP Permit Area includes all nonfederal lands within the DRECP Development Focus Areas and Conservation Planning Areas in the entire Plan Area (see Figure I.0-4), as well as nonfederal inholdings within Existing Conservation Lands and BLM-administered lands. Within the GCP Permit Area, Covered Species would be incidentally taken in conjunction with Covered Activities. The larger GCP Plan Area encompasses the GCP Permit Area as well as Priority Conservation Areas outside the GCP Permit Area where permittee non-acquisition mitigation measures may be implemented (i.e., BLM-administered lands corresponding to the Interagency Plan-Wide Conservation Priority Areas shown on Figure II.3-2 and the DRECP NCCP Reserve Design, as shown in Figure II.3-7). The USFWS proposed GCP, as well as CEC and CSLC application materials for incidental take permits under the GCP, are included in Appendix M. The proposed CEC Permit Area consists of nonfederal lands where CEC would have project licensing authority, which in some cases may include CSLC lands, but it does not have a specific spatial boundary. The proposed CSLC Permit Area consists of CSLC school lands and sovereign lands.

INTENTIONALLY LEFT BLANK

I.1 OBJECTIVES/PURPOSE AND NEED

Under the California Environmental Quality Act (CEQA), a statement of objectives sought by the proposed project is required to help the lead agency develop and evaluate a reasonable range of alternatives required in an Environmental Impact Report (EIR) and aid the decision makers in preparing findings and/or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project.

Under the National Environmental Policy Act (NEPA), the purpose and need of a proposed action establishes a basis for the development of the range of reasonable alternatives required in an Environmental Impact Statement (EIS) and assists with the identification and eventual selection of a preferred alternative. The statement should briefly specify the underlying purpose and need to which an agency (or agencies) is responding in proposing the alternatives, including the preferred alternative.

This chapter briefly explains the objectives/purpose and need of the planning effort for each agency working on the Desert Renewable Energy Conservation Plan (DRECP or Plan) and EIR/EIS. This chapter also describes each agency's roles and responsibilities and identifies the discretionary approvals and/or decisions each proposed to make.

I.1.1 Interagency Objectives/Purpose and Need

The fundamental interagency goal of the DRECP is to provide a streamlined process for the development of utility-scale renewable energy generation and transmission consistent with federal and state renewable energy targets and policies, while simultaneously providing for the long-term conservation and management of Covered Species and natural communities as well as other physical, cultural, scenic and social resources within the Plan Area with durable and reliable regulatory assurances.

I.1.2 Bureau of Land Management Purpose and Need

The Bureau of Land Management (BLM) must respond to the increasing demand for renewable energy development and transmission, driven in part by:

- The Energy Policy Act's goal of at least 10,000 megawatts (MW) of renewable energy generation on public land as well as the more recent goal of an additional 10,000 MW on public land by 2020 (The President's Climate Action Plan, Executive Office of the President, June 2013).
- The Presidential Memorandum, issued May 17, 2013, directs federal agencies to modernize federal infrastructure review and permitting regulations, policies, and procedures. Among other best management practices, this memorandum directs federal agencies to integrate project reviews among agencies with permitting

responsibilities; ensure early coordination with other federal agencies, as well as with state, local, and tribal governments; strategically engage with, and conduct outreach to, stakeholders; employ project-planning processes and individual project designs that consider local and regional ecological planning goals; utilize landscape-level mitigation practices; promote the sharing of scientific and environmental data in open-data formats to minimize redundancy, facilitate informed project planning, and identify data gaps early in the review and permitting process; and apply best environmental and cultural practices as set forth in existing statutes and policies.

- The Department of the Interior's (DOI's) established national policy goals (Secretarial Order [SO] 3285 and SO 3285A1; DOI 2009) to identify and prioritize specific locations best suited for large-scale production of solar energy on public lands; encourage the production, development, and delivery of renewable energy as one of DOI's highest priorities; and work collaboratively with others to encourage the timely and responsible development of renewable energy and associated transmission while protecting the nation's water, wildlife, and other natural resources.
- SO 3330 establishes a DOI-wide mitigation strategy that will ensure inconsistency and efficiency in the review and permitting of infrastructure development projects and in conserving our nation's valuable national and cultural resources (DOI 2013). This strategy includes the use of a landscape-scale approach to identify and facilitate investment in key conservation priorities in a region, early integration of mitigation considerations in project planning and design, ensuring the durability of mitigation measures over time, ensuring transparency and consistency in mitigation decisions, and a focus on mitigation efforts that improve the resilience of our nation's resources in the face of climate change.

Meeting this goal will require the BLM to coordinate closely with the State of California in the permitting of renewable energy and transmission projects proposed on federally administered lands while also considering the state's Renewable Energy Portfolio goals (see Executive Order 13604 [77 FR 18887] on improving infrastructure permitting and review, Section 3[a(i)] on federal-state coordination). To accommodate this growth in renewable energy, the BLM also needs to consider changing land use allocations and management prescriptions in its California Desert Conservation Area (CDCA) Plan and Caliente and Bishop Resource Management Plans (RMPs) to address potential renewable energy and transmission development in the Plan Area.

BLM's objective for the DRECP and EIR/EIS is to:

- Conserve biological, physical, cultural, social, and scenic resources.
- Promote renewable energy and transmission development, consistent with federal renewable energy and transmission goals and policies, in consideration of state renewable energy targets.

- Comply with all applicable federal laws, including the BLM's obligation to manage the public lands consistent with the Federal Land Policy and Management Act's (FLPMA) multiple-use[1] and sustained yield[2] principles, unless otherwise specified by law.
- "Preserve the unique and irreplaceable resources, including archaeological values, and conserve the use of the economic resources" of the CDCA (FLPMA 601[a][6]; 43 United States Code [U.S.C.] 1701 et seq.).
- Identify and incorporate public lands managed for conservation purposes within the CDCA as components of the National Landscape Conservation System (NLCS), consistent with the Omnibus Public Land Management Act of 2009 (PL 111-11).
- Amend existing land use plans consistent with the criteria in FLPMA and the CDCA Plan.
- Coordinate planning and management activities with other federal, state, local, and tribal planning and management programs by considering the policies of approved land resource management programs, to the extent consistent with federal law.
- Make some land use allocation decisions outside the Plan Area but within the CDCA, including Visual Resource Management Classes, land use allocations to replace multiple-use classes, and NLCS designations.

I.1.2.1 Bureau of Land Management Roles and Responsibilities

The BLM is an agency of the DOI authorized by Congress to manage and regulate federal public lands. The BLM promulgates rules and land use authorizations, including the permitting of renewable energy and transmission facilities on public lands. The BLM develops land use plans to ensure that public lands are managed to protect various resource values while providing for human occupancy and use under the mandates of multiple use and sustained yield, while still allowing the possibility for change as required by federal law. Proponents for utility-scale solar and wind renewable energy facilities must

---

1 The term "multiple use" means the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output (FLPMA 103[c]; 43 U.S.C. 1701 et seq.).

2 The term "sustained yield" means the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use (FLPMA 103[h]; 43 U.S.C. 1701 et seq.).

obtain a right-of-way grant from the BLM to operate on federal public land. Geothermal energy resources development is permitted under the BLM's geothermal leasing program.

The BLM also has specific responsibilities and authorities to consider, plan for, protect, and enhance historic properties and other resources that may be affected by its actions, in compliance with FLPMA, NEPA, the National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.) and implementing regulations (36 Code of Federal Regulations [CFR] 800), the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, the Historic Sites Act of 1935, the Antiquities Act, the American Indian Religious Freedom Act, the Religious Freedom Restoration Act, Indian Sacred Sites (Executive Order [EO] 13007, 61 FR 26771 et seq.), Preserve America (EO 13287), Consultation and Coordination with Indian Tribal Governments (EO 13175), and related authorities.

In carrying out its responsibilities specific to the National Historic Preservation Act, the BLM has (1) developed policies and procedures through its directives system (BLM 2004); (2) executed a national programmatic agreement in 2012 to help guide the BLM's planning and decision making as it affects historic properties as defined in the National Historic Preservation Act; (3) executed a programmatic agreement in 2012 among the BLM and the State Historic Preservation Officers of six western states (including the California State Historic Preservation Officer) and the Advisory Council on Historic Preservation regarding solar energy development on lands administered by the BLM; and (3) assembled cultural heritage specialists to advise BLM managers and to implement cultural heritage policies consistent with the BLM's statutory authorities.

I.1.2.1.1 DRECP Development

The BLM has entered into the Memorandums of Understanding related to DRECP development to establish the Renewable Energy Action Team (REAT), establish the Renewable Energy Policy Group, participate with other agencies, and implement California renewable energy goals. During the planning process for the DRECP, BLM has used the findings of the Solar Programmatic Environmental Impact Statement (BLM and DOE 2010) and other relevant BLM studies and analyses to help inform DRECP development.

I.1.2.1.2 Federal Endangered Species Act

The BLM will make a decision whether to amend its land use plans within and outside the Plan Area. Furthermore, within the CDCA boundary, the BLM will make decisions regarding NLCS designations. These decisions will constitute a federal action subject to Section 7 consultation under the federal Endangered Species Act (ESA). For a full description of Section 7(a)(2) interagency cooperation process, see Section I.2.1.3, Endangered Species Act of 1973. The BLM will use the DRECP as a basis for consultation with the U.S. Fish and

Wildlife Service (USFWS). In addition, under ESA Section 7(a)(1), all federal agencies shall, in consultation with and with the assistance of the Secretary of the Interior, utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of listed endangered and threatened species (16 U.S.C. 1531 et seq.). The Biological Opinion may also include a Conference Opinion for any proposed species or critical habitat (50 CFR 402.10).

I.1.2.1.3 Bureau of Land Management Land Use Plan Amendments

BLM regulations (43 CFR 1610.5-5) allow BLM land use plans to be changed through amendment. The BLM may determine that an amendment is needed to consider monitoring and evaluation findings, new data, new or revised policy, or a change in circumstances or a proposed action that may result in a change in the scope of resource uses or a change in the terms, conditions, and decisions of an approved plan. The BLM regulations (43 CFR 1600) guide preparation of land use plan amendments, which must also undergo NEPA analysis as detailed in the Council on Environmental Quality regulations (40 CFR 1500) and DOI regulations (43 CFR 46). BLM is the lead agency for NEPA under FLPMA, and USFWS is the lead for NEPA under the ESA.

I.1.2.2 Bureau of Land Management Decisions to Be Made

The BLM will decide whether to amend the CDCA Plan, as currently amended, as well as the Caliente and Bishop RMPs. These amendments would identify desired outcomes expressed as specific goals and objectives, and allowable uses and management actions designed to achieve those specific goals and objectives. Specifically, in furtherance of the purpose of the DRECP to conserve biological, environmental, cultural, social, and scenic resources; respond to federal renewable energy goals and policies and consider state renewable energy targets; and comply with the FLPMA multiple-use management goals, the plan amendments would identify:

- Areas of the public lands that are suitable and available for utility-scale solar, wind, and geothermal energy development and transmission, and where that development can be focused and streamlined
- Areas of the public lands that are not suitable and are unavailable for these types of uses
- Areas of the public lands and actions that may be used as mitigation for these types of uses
- Public lands within the CDCA to be managed as components of the NLCS pursuant to the Omnibus Public Lands Management Act

- Other changes to land use allocations on the public lands, including but not limited to multiple-use classes in the CDCA, Visual Resource Management Classes, special recreation management areas, National Trail Management Corridors, wildlife and plant management areas, Areas of Critical Environmental Concern, and utility corridors
- Allowable uses, management actions, stipulations, best management practices, and mitigation measures to reduce or avoid impacts associated with large ground-disturbing activities, including renewable energy and transmission projects on public lands, and allowable uses and management actions designed to enhance resources and visitor experiences on public lands.

I.1.3 U.S. Fish and Wildlife Service Purpose and Need

The USFWS, along with the BLM, is a co-lead federal agency for the EIS. The USFWS's proposed action is to consider the issuance of Section 10(a)(1)(B) permits under the federal ESA for the incidental take of Covered Species on nonfederal lands within the DRECP for the proposed General Conservation Plan (GCP), and the issuance of take permits for golden eagles (*Aquila chrysaetos*) under the Bald and Golden Eagle Protection Act (Eagle Act) on both federal and nonfederal lands within the Plan Area. The proposed take would be incidental to otherwise lawful activities that are necessary to develop renewable energy resources and transmission development and conservation actions within the Plan Area.

The USFWS has prepared this DRECP and EIR/EIS to analyze the impacts of the USFWS's proposed action. The USFWS's purpose for taking action is to (1) provide a means to conserve the ecosystems upon which federally protected species may be found and (2) to provide a program for the conservation of such species for the continued benefit of the American people. The USFWS's purpose is also to support DOI's national policy goals (Secretarial Order [SO] 3285 and SO 3285A1; DOI 2009) to identify and prioritize specific locations best suited for large-scale production of solar energy on public lands; encourage the production, development, and delivery of renewable energy as one of DOI's highest priorities; and work collaboratively with others to encourage the timely and responsible development of renewable energy and associated transmission while protecting the nation's water, wildlife, and other natural resources.

The USFWS's need for taking action is to respond to permit requests by determining whether to issue permits for Covered Species related to activities that have the potential to result in incidental take (ESA Section 10[a][1[[B] and the Eagle Act). In making permit decisions, the USFWS needs to ensure the survival and recovery of endangered and threatened species, and the preservation of golden eagles, affected by proposed renewable energy, transmission projects, and conservation actions within the Plan Area. The USFWS's permit decisions would be based on the Record of Decision for the EIS and approval of the

GCP component of the DRECP, which would provide a programmatic framework for a streamlined permitting process and result in greater conservation values than a project-by-project, species-by-species process.

I.1.3.1 U.S. Fish and Wildlife Service Roles and Responsibilities

The USFWS is authorized by Congress to administer and enforce the ESA of 1973, as amended (16 U.S.C. 1531 et seq.), with respect to terrestrial wildlife, non-anadromous fish species, insects, and plants; to enter into agreements with states, local governments, and other entities to conserve threatened, endangered, and other species of concern; to authorize take under the ESA; and to provide regulatory assurances (50 CFR 17.22[b][5] and 17.32[b][5]). In addition, the USFWS administers and enforces other federal wildlife laws such as the Eagle Act and the Migratory Bird Treaty Act.

The USFWS has two roles in the DRECP and EIR/EIS planning effort that involve different responsibilities: (1) as a REAT agency working collaboratively with other agencies and stakeholders to develop the interagency DRECP and EIR/EIS alternatives on both federal and nonfederal lands, and (2) as a regulatory agency responsible for conservation of federal trust resources.

In the first role, USFWS contributed to designing alternatives for a renewable energy program and conservation strategy for all public trust resources, including natural communities, wildlife, and special-status species consistent with the conservation objectives under the ESA, NEPA, Migratory Bird Treaty Act, Eagle Act, and other applicable federal laws, regulations, and policies. USFWS also worked with interested parties to determine an environmentally sustainable proportion of the state's renewable energy portfolio to be met in the California deserts. This determination provides for timely and responsible ESA permitting decisions relating to renewable energy and associated transmission projects in the Plan Area while protecting the nation's water, wildlife, and other natural resources through avoiding, minimizing, and mitigating adverse effects to public trust fish and wildlife resources. The USFWS participated in developing the EIR/EIS to analyze the effects of the interagency Preferred Alternative and other alternatives, which address issues such as development restrictions, reserve design and mitigation options, and the extent of renewable energy development to occur on wildlands and disturbed lands in the desert ecosystem.

In the second role as a regulatory agency in this planning process, the USFWS prepared the EIS element of the Plan that considers the USFWS's proposed action under NEPA (i.e., to consider the issuance of Section 10[a][1][B] permits for the incidental take of Covered Species on nonfederal lands within the GCP Permit Area and the issuance of take permits under the Eagle Act on both federal and nonfederal lands within the Plan Area). The USFWS is also responsible for consulting under Section 7(a)(2) of the ESA at the request of other

federal action agencies, such as BLM, if the agency's action may affect federally listed species or designated critical habitat, as described earlier in Section I.1.2.1.2, Federal Endangered Species Act. Thus, the USFWS's second role in the DRECP effort is to determine whether to issue incidental take permits under Section 10(a)(1)(B) of the ESA for Covered Species that would be affected by covered development activities on nonfederal lands within the GCP Permit Area; to determine whether BLM's land use plan amendment and proposed development on federal lands is consistent with Section 7(a)(2) of the ESA, including formal consultations that result in biological opinions; to aid BLM in meeting its obligations under Section 7(a)(1) of the ESA; and to determine whether to issue Eagle Act permits for golden eagles that would be affected by Covered Activities on federal and nonfederal lands within the Plan Area.

In making permit decisions and issuing biological opinions, the USFWS strives to ensure the survival and recovery of endangered and threatened species. For renewable energy and transmission development covered by the DRECP, the DRECP would provide the basis for the USFWS's permit decisions under Section 10 for projects on nonfederal lands, and for its jeopardy analyses and incidental take exemptions under Section 7 for projects on federal lands.

In addition, the USFWS is considering the issuance of take permits for golden eagles under the regulatory provisions of the Eagle Act. These regulations allow the USFWS to authorize take of eagles through the issuance of Eagle Act take permits (50 CFR 22.26) or to confer take authorization through an ESA Section 10(a)(1)(B) permit process, as long as the permitting standards of the Eagle Act have been met (50 CFR 22.11). The golden eagle is proposed as an unlisted Covered Species under the GCP element of the DRECP.

I.1.3.2 U.S. Fish and Wildlife Service Decisions to Be Made

The USFWS must determine whether to issue incidental take permits under Section 10 of the ESA based on USFWS approval of the GCP component of the DRECP that includes the mandatory elements of ESA Section 10(a)(2)(A) and the Eagle Act. Incidental take permit issuance criteria are defined in ESA Section 10(a)(2)(B) and its implementing regulations (50 CFR 17.22[b][2] and 17.32[b][2]). In addition, incidental take permit issuance is a federal action subject to ESA Section 7. Section 7(a)(2) requires all federal agencies, in consultation with the USFWS, to ensure that any action authorized, funded, or carried out by any such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of such species' designated critical habitat. Because the USFWS is the action agency for the proposed GCP component of the DRECP action alternatives, as part of its approval process the USFWS will conduct an internal Section 7 consultation on the proposed issuance of the Section 10 permits under the GCP. Because issuance of a Section 10 permit involves a

federal authorization, it also must be considered through the NEPA process. After public review of the DRECP and EIR/EIS and the GCP component, the USFWS will determine whether the required permit issuance criteria have been met, as documented within an ESA Section 10 Findings document, an ESA Section 7 Biological Opinion, and a NEPA Record of Decision document.

The USFWS must also determine whether to authorize take of golden eagles under the regulatory provisions of the Eagle Act, either through ESA Section 10 permits or take permits under the Eagle Act. Unintentional take permit issuance criteria for eagles are defined in the Eagle Act permit implementing regulations (50 CFR 22.26).

I.1.4 State Objectives

California Energy Commission, California Department of Fish and Wildlife, and California State Lands Commission Objectives

The California Energy Commission (CEC), California Department of Fish and Wildlife (CDFW), and California State Lands Commission (CSLC) identified three primary objectives for the DRECP:

1. Reduce the biological and other environmental impacts of future utility-scale renewable energy developments in the Plan Area by designating appropriate areas for renewable energy development within the context of a landscape-scale conservation plan that are sufficient to accommodate the foreseeable demand for renewable energy in the DRECP through 2040.
2. Contribute to California's Renewables Portfolio Standard and the state's greenhouse gas reduction mandates and goals by planning for approximately 20,000 MWs of renewable energy generation and associated transmission capacity in the Plan Area by 2040, including obtaining state and federal incidental take authorizations with regulatory assurances needed for covered renewable energy and transmission projects.
3. Provide for the long-term conservation and management of Covered Species within the Plan Area and preserve, restore, and enhance natural communities and ecosystems in which those species are found by focusing renewable energy development away from areas of greatest biological importance or sensitivity; coordinating and standardizing biological avoidance, minimization, mitigation, compensation, conservation, and management requirements for Covered Activities within the Plan Area; and taking other actions to meet conservation planning requirements in state and federal law.

The state must meet these objectives to achieve the fundamental purpose of the DRECP. For that reason, each of the alternatives analyzed in detail for CEQA purposes includes both of these objectives, but uses different approaches to accomplishing those objectives.

I.1.4.1 California Energy Commission

I.1.4.1.1 California Energy Commission Roles and Responsibilities

As the CEQA lead agency for the DRECP, the CEC prepared, in consultation with CDFW, USFWS, BLM, and CSLC, the portions of the EIR/EIS that evaluate the environmental effects of the Natural Community Conservation Plan (NCCP) under CEQA. CEC also shares responsibility for preparing the NCCP portions of the DRECP. CEC is an applicant for a federal incidental take permit under the GCP, and after the DRECP is approved by CDFW, a regulatory agency exercising authority pursuant to the Natural Community Conservation Planning Act (NCCPA) and the Warren-Alquist Act.

I.1.4.1.1.1 General Conservation Plan

The DRECP and EIR/EIS contains the GCP component proposing a conservation plan to address mitigation for the effects of covered renewable energy projects on Covered Species *on nonfederal lands* within the Plan Area. The CEC has submitted a Federal Fish and Wildlife Permit Application Form and GCP Supplementary Application Form to the USFWS for an incidental take permit under ESA Section 10(a)(1)(B) for Covered Activities. In its application, CEC intends to provide assurances to the USFWS that the permit application meets the ESA permit issuance criteria by complying with the terms and conditions of the GCP. The CEC intends to request an incidental take permit with a term through 2040. The CEC would extend any take authorization it receives to developers of geothermal and solar thermal facilities 50 MW and larger that are licensed by CEC and whose projects qualify as Covered Activities under the DRECP, and that are conducted in compliance with CEC's Section 10 permit under the GCP.

I.1.4.1.1.2 Natural Community Conservation Plan

Under the NCCPA, participating agencies within an NCCP area can receive take authorization through permits issued by CDFW (California Fish and Game Code, Section 2835). Such permits allow these agencies to confer to project developers take authorization for projects that conform to the approved NCCP. But the Warren-Alquist Act provides that the CEC's license to construct and operate geothermal and solar thermal facilities 50 MW and larger replaces all necessary state and local permits. This provision means that CDFW does not issue incidental take under the California Endangered Species Act (CESA) or take authorizations under the NCCPA for projects licensed by the CEC; instead, the CEC has independent authority to authorize take consistent with CESA or, if applicable, with the

terms of a CDFW-approved NCCP for projects within CEC's jurisdiction. For this reason, CEC will apply to CDFW for approval of the DRECP as an NCCP, but will not seek a Section 2835 take permit from CDFW for its licensing activities as part of that approval. CDFW alone will determine whether the DRECP meets the approval criteria under the NCCPA, and CDFW and CEC will both implement and issue take authorizations under any approved NCCP according to their respective jurisdiction.

As part of its exclusive permitting authority under the Warren-Alquist Act for projects under its jurisdiction, the CEC must confer with CDFW on proposed projects, mitigation measures, and conditions of CEC certification to ensure that projects licensed by CEC meet state standards for the protection of fish, wildlife, and other natural resources under CDFW's jurisdiction. When approving projects covered by the DRECP, CEC would also need to make findings that the project conforms to the terms and conditions of the NCCP that has been approved by CDFW.

At a future date, CEC might apply to CDFW for a Section 2835 take permit under the DRECP for the limited and specific purpose of obtaining authorization to take Covered Species during conservation activities that are not related to power plant licensing. CEC is not certain it will require take authorization from CDFW for this purpose, so does not intend to apply for a Section 2835 at the outset of DRECP approval and implementation. But the DRECP and the EIR/EIS analyze the impact of take associated with conservation activities required by the DRECP, so a later application by CEC for a Section 2835 permit for this purpose would likely be within the scope of the DRECP, and would not require extensive analysis under CEQA.

I.1.4.1.2 California Energy Commission Discretionary Approvals/Decisions to Be Made

CEC anticipates it will consider discretionary decisions relating to the DRECP for the following: (1) certification of the programmatic EIR/EIS under CEQA, (2) submission of the NCCP element of the DRECP to CDFW for approval, and (3) submission of an application to the USFWS for the issuance of an ESA incidental take permit under the GCP for CEC-licensed renewable energy projects on nonfederal lands within the Plan Area. The CEC also anticipates taking subsequent actions, consistent with its existing authority, to implement and administer an approved plan.

I.1.4.2 California Department of Fish and Wildlife

As outlined in the Memorandum of Understanding between CEC and CDFW, CDFW is participating in developing the DRECP and will ultimately consider approving the NCCP

element under the NCCPA (CEC and CDFG 2008).[3] The NCCP is intended to conserve and manage Covered Species, natural communities, and habitats in the Plan Area while providing for a streamlined permitting process for renewable energy projects in designated development areas. The NCCP also is intended to provide applicants with conservation and siting compliance conditions.

The proposed CDFW actions include (1) consideration of approval of the NCCP element of the DRECP under the NCCPA; (2) cooperative implementation of the DRECP's regional natural resource conservation strategy; (3) issuance of Section 2835 take authorizations for Covered Species to CSLC and any other state or local agencies, other than CEC, that participate in the NCCP or directly to project proponents where the state or local agency with jurisdiction over the project has not itself received a Section 2835 permit and is not under the CEC's jurisdiction; and (4) issuance of Section 2835 take authorizations for Covered Species on federal lands directly to project proponents. The BLM will not seek, and is not required to obtain, a permit under the NCCPA for its activities on public land. While a renewable energy project proponent may seek a permit from CDFW under the NCCP for activities on federal public lands, all such activities on federal public lands must not conflict with federal law.

I.1.4.2.1 California Department of Fish and Wildlife Roles and Responsibilities

Under the provisions of both the California Fish and Game Code and CEQA, the CDFW is authorized to act as trustee for the state's wildlife; designated rare, threatened, and endangered plants; ecological reserves; and other areas administered by the CDFW. The CDFW also administers and enforces the provisions of the California Fish and Game Code and enters into agreements with federal, state, and local government agencies and other entities for the conservation of species and habitats. The CDFW may authorize, pursuant to the CESA, the take of species (listed by the California Fish and Game Commission) as threatened, endangered, or candidates for listing, where that take is incidental to an otherwise lawful activity. CDFW may also permit incidental take and provide regulatory assurances under the NCCPA for covered state-listed and unlisted species whose conservation and management are provided for in a CDFW-approved NCCP. CDFW also regulates streambed and lake alterations (California Fish and Game Code, Section 1600 et seq.).

[3] On January 1, 2013, the California Department of Fish and Game (CDFG) changed its name to the California Department of Fish and Wildlife (CDFW). For documents published before the name change, this document cites CDFG as the author.

I.1.4.2.2 Discretionary Approvals/Decisions to Be Made

CDFW is a responsible agency under CEQA and will decide whether to approve the DRECP as an NCCP. If approved as an NCCP, the CDFW may issue take authorizations under Section 2835 of the NCCPA to state and local agencies on nonfederal land, or directly to project proponents on nonfederal or federal land (California Fish and Game Code, Section 2800 et seq.).

I.1.4.3 California State Lands Commission

Under the School Land Bank Act (California Public Resources Code, Section 8700 et seq.), CSLC is responsible for the development and management of school lands in the Plan Area. The majority of the approximate 340,500 acres under the jurisdiction of the CSLC in the Plan Area are fragmented and isolated such that the size of the individual parcels is insufficient for development of renewable energy projects. In addition, significant portions of these parcels are located within national parks, preserves, monuments, and forests. Although such lands retain significant conservation value, their location limits development potential.

The May 21, 2012, Memorandum of Agreement between the BLM and CSLC outlines the objectives of the agencies for implementing land exchanges as well as the process for developing a proposal and completing the land exchanges (see Section I.0.1, Document Organization; BLM and CSLC 2012). The CSLC's participation in the DRECP and school land consolidation effort is in anticipation of identifying renewable energy development opportunities and in using the DRECP to prepare tiered CEQA and NEPA analysis for specific land exchange transactions and renewable energy projects on CSLC land.

I.1.4.3.1 General Conservation Plan

As described in I.0.3.2, CSLC has submitted a Federal Fish and Wildlife Permit Application Form and GCP Supplementary Application Form to the USFWS for an incidental take permit under ESA Section 10(a)(1)(B) for Covered Activities that affect Covered Species on CSLC lands. In its application, CSLC intends to provide assurances to the USFWS that the permit application meets the ESA permit issuance criteria by complying with the terms and conditions of the GCP. CSLC intends to request an incidental take permit with a term through 2040. CSLC would extend any take authorization it receives to renewable energy projects on CSLC lands that qualify as Covered Activities under the DRECP and that are conducted in compliance with CSLC's Section 10 permit under the GCP.

I.1.4.3.2 Natural Community Conservation Plan

CLSC is also applying for a take permit from CDFW under California Fish and Game Code Section 2835 for Covered Activities that affect Covered Species on CSLC lands. Similar to its ESA Section 10(a)(1)(B) application, CSLC intends to:

- Provide assurances to the CDFW that the permit application meets the NCCPA permit issuance criteria by complying with the terms and conditions of the NCCP.
- Request an incidental take permit with a term through 2040.
- Extend any take authorization it receives to renewable energy projects on CSLC lands that qualify as Covered Activities under the DRECP and that are conducted in compliance with CSLC's Section 2835 permit under the NCCP.

I.1.4.3.3 California State Lands Commission Roles and Responsibilities

The CSLC is the landowner and manager of the state school lands in the Plan Area; it has jurisdiction over any reserved mineral interests, regardless of surface ownership. The CSLC is also the owner and administrator of sovereign lands held in trust by the State of California, including Owens Lake and the bed of the Colorado River. During project-specific review and approval, the CSLC may be a lead or responsible agency under CEQA due to its authority to require a lease or permit for covered renewable energy project proposals that may be developed on school lands or sovereign lands in the Plan Area. CSLC may also be a lead agency due to its authority to approve land exchanges to facilitate consolidation of school lands for purposes of developing renewable energy projects within the Plan Area, as described in the following discussion.

I.1.4.3.4 California State Lands Commission Discretionary Approvals/Decisions to Be Made

The CSLC's discretionary approval authority includes (1) proposing and implementing land exchanges with the BLM in the Plan Area for the purpose of creating large, contiguous land holdings for large renewable energy projects or mitigation; (2) considering project proposals and issuance of permits and/or leases for the use of school lands; and (3) considering project proposals and issuance of permits and/or leases for the use of State of California lands.

CSLC will consider discretionary decisions relating to the DRECP for Covered Activities that affect Covered Species on CSLC lands within the Plan Area, based on CSLC's submission of an application to the USFWS for the issuance of an ESA incidental take permit under the GCP for renewable energy projects on CSLC lands. CSLC may also apply for a take permit from CDFW (California Fish and Game Code, Section 2835).

I.2 LEGAL FRAMEWORK

At both the federal and state levels, current energy policy includes targets for increasing electricity generated from renewable energy sources. California's deserts have renewable energy potential of statewide importance, and renewable energy and transmission development is proceeding throughout the desert region. California's deserts also support irreplaceable biological, physical, cultural, scenic, and social resources. The Desert Renewable Energy Conservation Plan (DRECP or Plan) and Environmental Impact Report/Environmental Impact Statement (EIR/EIS) analyzes the potential environmental impacts of covered renewable energy and transmission projects and establishes requirements and conditions, including impact avoidance, and minimization and mitigation measures, which allow for streamlined state and federal permitting of such projects.

The Natural Community Conservation Plan (NCCP) and General Conservation Plan (GCP) components of the DRECP include biological goals and objectives as well as Conservation and Management Actions (CMAs), which provide for the conservation and management of certain Covered Species and natural communities within the Plan Area. The Land Use Plan Amendment (LUPA) includes conservation and management actions for the Covered Species and natural communities, as well as other physical, cultural, scenic, and social resources, on Bureau of Land Management (BLM) lands.

The chapter describes the context within which the DRECP and EIR/EIS was developed. The following statutes, regulations, executive orders, and policies establish requirements or standards for the lead and cooperating agencies in the development and implementation of the DRECP and EIR/EIS. For a summary of other resource-specific federal and state laws, orders, and regulations, see Volume III. The following provides the relevant regulatory framework for each Renewable Energy Action Team agency.

I.2.1 Bureau of Land Management

I.2.1.1 Federal Land Policy and Management Act

The Federal Land Policy and Management Act of 1976 (FLPMA), as amended, 43 United States Code (U.S.C.) Section 1701 et seq., provides the authority for the BLM land use planning. Section 102 (a) (7) and (8) sets forth the policy of the United States concerning the management of the public lands. FLPMA requires that "goals and objectives be established by law as guidelines for public land use planning, and that management be on the basis of multiple use and sustained yield unless otherwise specified by law" (Section 102[7]):

> The term 'multiple use' means the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the

> most judicious use of the lands for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and non-renewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.

Section 201 requires the Secretary of the Interior to prepare and maintain an inventory of the public lands and their resources and other values, giving priority to Areas of Critical Environmental Concern (ACECs), and, as funding and workforce are available, to determine the boundaries of the public lands, provide signs and maps to the public, and provide inventory data to state and local governments.

Section 202 (a) requires the Secretary, with public involvement, to develop, maintain, and when appropriate, revise land use plans that provide by tracts or areas for the use of the public lands.

Section 202(c)(1–9) requires that, in developing land use plans, the BLM shall use and observe the principles of multiple use and sustained yield; use a systematic interdisciplinary approach; give priority to the designation and protection of ACECs; rely, to the extent it is available, on the inventory of the public lands; consider present and potential uses of the public lands; consider the relative scarcity of the values involved and the availability of alternative means and sites for realizing those values; weigh long-term benefits to the public against short-term benefits; provide for compliance with applicable pollution control laws, including state and federal air, water, noise, or other pollution standards or implementation plans; and consider the policies of approved state and tribal land resource management programs; developing land use plans that are consistent with state and local plans to the maximum extent possible and consistent with federal law and the purposes of the FLPMA.

Section 202 (d) provides that all public lands, regardless of classification, are subject to inclusion in land use plans, and that the Secretary may modify or terminate classifications consistent with land use plans.

Section 202 (f) and Sec. 309 (e) provide that federal, state, and local governments and the public be given adequate notice and an opportunity to comment on the formulation of standards and criteria for, and to participate in, the preparation and execution of plans and programs for the management of the public lands.

Section 302 (a) requires the Secretary to manage BLM lands under the principles of multiple use and sustained yield, in accordance with available land use plans developed under Section 202 of FLPMA. There is one exception: where a tract of BLM land has been dedicated to specific uses according to other provisions of law, it shall be managed in accordance with such laws.

Section 302 (b) recognizes the entry and development rights of mining claimants, while directing the Secretary to prevent unnecessary or undue degradation of the public lands.

Section 601 establishes the California Desert Conservation Area (CDCA), and instructs the Secretary of the Interior to prepare and implement a comprehensive, long-range plan for the management, use, development, and protection of the public lands within the CDCA. That plan must take into account the principles of multiple use and sustained yield in providing for resource use and development, including, but not limited to, maintenance of environmental quality, rights-of-way (ROWs), and mineral development. Changes must be made through and in consideration of land use planning and other FLPMA considerations.

I.2.1.1.1 California Desert Conservation Area Plan

The CDCA Plan was approved in 1980 to meet this congressional direction. The CDCA Plan provides a multiple-use management blueprint for approximately 25 million acres in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, and San Bernardino counties, of which 10 million acres are managed by the BLM. Since adoption, the BLM has amended the CDCA Plan numerous times (BLM 1999). The major CDCA amendments within the Plan Area include the West Mojave Desert CDCA Plan Amendment (2006), the Northern and Eastern Mojave Desert CDCA Plan Amendment (2002), the Northern and Eastern Colorado Desert CDCA Plan Amendment (2002), the Western Colorado Desert California Desert Conservation Amendment CDCA Plan Amendment (2003), and the Imperial Sand Dunes Recreation Area Management Plan (2013). These amendments are discussed in detail in Volume III, Section III.11.3.1.1, Bureau of Land Management.

The CDCA Plan, as amended, is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The goal of the CDCA Plan "is to provide for the use of the public lands, and resources of the California Desert Conservation Area, including economic, educational, scientific, and recreational uses, in a manner which enhances wherever possible—and which does not diminish, on balance—the environmental, cultural, and aesthetic values of the Desert and its productivity" (CDCA Plan, Introduction, BLM 1999, pp. 5–6).

This goal is achieved in the CDCA Plan through the direction given for management actions and resolution of conflicts. "Direction is stated first on a geographic basis in the guidelines for each of the four multiple-use classes. Within those guidelines further refinement of direction is expressed in the goals for each Plan element. Direction is also expressed in certain site-specific Plan decisions such as Areas of Critical Environmental Concern (ACECs)." Plan elements for the CDCA Plan include: Cultural Resource Element, Native American Element; Wildlife Element; Vegetation Element; Wilderness Element; Wild Horse and Burro Element; Livestock Grazing Element; Recreation Element; Motorized-Vehicle Access Element; Geology, Energy and Mineral (G-E-M) Resources Element; Energy Production and Utility Corridors Element; and Land Tenure Adjustment Element.

Decisions within the CDCA Plan that are being amended by the DRECP are described in detail in Volume II, Chapter II.2, No Action Alternative.

I.2.1.1.2 Caliente Resource Management Plan

The Caliente Resource Management Plan (RMP) was approved in 1997. The Caliente Resource Area encompasses a geographic area including 13.8 million acres of land in central California. The area covered by this plan includes portions of Kern, Kings, San Luis Obispo, Santa Barbara, Tulare, and Ventura counties. Major cities include Bakersfield, Santa Barbara, and San Luis Obispo. Stretching from the Pacific Ocean across the southern Central Valley and through the Sierra Nevada Mountains, public lands are scattered across the planning area in numerous small parcels. The larger blocks of public land lie in the Carrizo Plain of eastern San Luis Obispo County, in the Lake Isabella–Walker Pass regions of Kern and Tulare counties, and in the Chimney Peak and Three Rivers regions of Tulare County.

The Caliente RMP consists of a combination of management objectives, allocations, and guidelines that will direct where things may happen, the resource conditions to be maintained, and the use limitations expected to be necessary to meet management objectives.

Decisions within the Caliente RMP that are being amended by the DRECP are described in detail in Volume II, Chapter II.2.

I.2.1.1.3 Bishop Resource Management Plan

The Bishop RMP was approved in 1993. The Bishop RMP provides direction for managing BLM-administered public land surface and federal mineral estate in the Bishop Resource Area, which is located in the eastern Sierra region of California in Inyo and Mono counties. The Bishop RMP focuses on four major issues: recreation, wildlife, minerals, and land ownership and authorization. In addition to these issues, specific decisions relate to ACECs, Special Recreation Management Areas, Scenic Byways, and streams eligible for study as

potential additions to the National Wild and Scenic River System. There are also decisions addressing livestock grazing, cultural resources, fuelwood harvesting, fire suppression, and an east–west transmission line corridor.

Decisions within the Bishop RMP that are being amended by the DRECP are described in detail in Volume II, Chapter II.2.

I.2.1.2 National Environmental Policy Act

The National Environmental Policy Act (NEPA; 42 U.S.C. 4321 et seq.) directs "a systematic, interdisciplinary approach" to federal planning and decision making and requires the preparation of EISs for "major federal actions significantly affecting the quality of the human environment." The CEQ [Council on Environmental Quality] Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500–1508) require federal agencies to identify and assess reasonable alternatives to proposed actions that will restore and enhance the quality of the human environment and avoid or minimize adverse environmental impacts. Federal agencies are further directed to emphasize significant environmental issues in project planning and to integrate impact studies required by other environmental laws and Executive Orders into the NEPA process. The NEPA process should therefore be seen as an overall framework for the environmental evaluation of federal actions.

Land use plan amendments are federal actions subject to NEPA compliance.

The NEPA and land use planning process includes public involvement through scoping, which CEQ regulations define as an "early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action." Volume V, Section V.1.1, of this document describes the scoping process. The federal agencies will review and address substantive public comments received for the DRECP and EIR/EIS. The EIS process culminates in issuance of a Record of Decision (ROD). The ROD will document the alternative selected for implementation; describe additional terms and conditions, stipulations, or mitigations that may be required; and discuss considerations that the agencies considered in making the final decision.

I.2.1.3 Federal Endangered Species Act of 1973

The Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.):

1. Provides a means whereby the ecosystems upon which endangered and threatened species depend may be conserved and provides a program for the conservation of such endangered and threatened species (Section 1531[b], Purposes).

2. Requires all federal agencies to seek to conserve endangered and threatened species and utilize applicable authorities in furtherance of the purposes of the ESA (Section 1531[c][1], Policy).
3. Requires all federal agencies to avoid jeopardizing the continued existence of any species listed or proposed for listing as threatened or endangered or destroying or adversely modifying its designated or proposed critical habitat (Section 1536[a], Interagency Cooperation).
4. Requires all federal agencies to consult (or confer) in accordance with Section 7 of the ESA with the Secretary of the Interior, through the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service, to ensure that any federal action (including land use plans) or activity is not likely to jeopardize the continued existence of any species listed or proposed to be listed under the provisions of the ESA, or result in the destruction or adverse modification of designated or proposed critical habitat (Section1536[a], Interagency Cooperation, and 50 CFR 402).

Although not required by regulation (50 CFR 402.12[b]), BLM has determined it will develop a Biological Assessment for the purpose of evaluating the potential effects of its LUPA, a federal action subject to Section 7(a)(2), on species listed or proposed to be listed as threatened or endangered under the ESA, and on critical habitat that has been designated or proposed for designation within the Plan Area. If an action is likely to adversely affect listed species or critical habitat, consultation under Section 7(a)(2) would result in a Biological Opinion and/or Conference Opinion issued by the U.S. Fish and Wildlife Service (USFWS) to the federal action agency. The Biological Opinion may also include a Conference Opinion for proposed species or critical habitat (50 CFR 402.10). The Biological Opinion would indicate whether the USFWS believes the action would jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat (50 CFR 402.14(g)(4)). In addition, the Biological Opinion would provide a statement of incidental take if such take may occur (50 CFR 402.14(g)(8)).

I.2.1.3.1 BLM Special-Status Species

It is BLM policy to manage for the conservation of special-status plants and their associated habitats and to ensure that actions authorized, funded, or carried out do not contribute to the need to list any sensitive species as threatened or endangered.

BLM Handbook 6840 (BLM 2008) states:

> special-status species are: (1) species listed or proposed for listing under the Endangered Species Act (ESA), and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and

need for future listing under the ESA, which are designated as Bureau sensitive by the State Director(s).

I.2.1.3.2 Executive Order 13112

Executive Order 13112, Invasive Species, (64 FR 6183 et seq.) provides that no federal agency shall authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk or harm will be taken in conjunction with the actions.

I.2.1.4 National Historic Preservation Act of 1966

Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.), requires federal agencies to take into account the effects of their undertakings (projects), licensed or executed by the agency, on historic properties listed or eligible for listing in the National Register of Historic Places, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings (16 U.S.C. 470[f]). The Section 106 process seeks to accommodate historic preservation concerns with the needs of federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, commencing at the early stages of project planning. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects, and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties. This investigation provides the information to evaluate the potential effects to cultural resources from each of the proposed alternatives.

Historic properties are defined as prehistoric and historic sites, buildings, structures, districts, and objects included in or eligible for inclusion on the National Register of Historic Places, as well as artifacts, records, and remains related to such properties (16 U.S.C. 470w[5]). Historic properties may include places of traditional religious and cultural importance to Indian tribes. Places of traditional religious or cultural importance to tribes may be archeological sites but often they are not. Consultation with tribes is required to identify such properties, assess their significance, determine the effects of the undertaking upon them, and determine appropriate treatment to avoid or reduce any adverse effect to them.

An undertaking is defined as a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; those

requiring a federal permit, license, or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency.

I.2.1.5 Omnibus Public Land Management Act of 2009

In June 2000, the Department of the Interior and BLM established the National Landscape Conservation System (NLCS) to provide for coordinated protection of the BLM's conservation lands. On March 30, 2009, President Barack Obama signed into law the Omnibus Public Land Management Act of 2009 (PL 111-11), which congressionally established the NLCS, to "conserve, protect and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations." The NLCS includes areas administered by the BLM such as national monuments, conservation areas, wilderness study areas, scenic trails or historic trails designated as a component of the National Trails System, components of the National Wild and Scenic Rivers System, components of the National Wilderness Preservation System, and public land within the CDCA administered by the BLM for conservation purposes (Section 202 of the Act).

The NLCS brings into a single system some of the BLM's premier designations. Inclusion in the NLCS does not create any new legal protections for the lands already designated as national monuments, conservation areas, wilderness study areas, scenic trails, or historic trails designated as a component of the National Trails System, components of the National Wild and Scenic Rivers System or components of the National Wilderness Preservation System. Inclusion in the NLCS system will create new legal protections through the land use plan decision for conservation lands in the CDCA. Within this document, lands within the NLCS are called "National Conservation Lands." The BLM will use the LUPA element of the DRECP to define which lands within the CDCA are included in the NLCS.

I.2.1.6 Other Relevant Federal Authorities

I.2.1.6.1 Antiquities Act of 1906

The Antiquities Act of 1906 (16. U.S.C. 431 et seq.) grants the president authority to designate national monuments to protect objects of historic or scientific interest. While most national monuments are established by the president, Congress has also occasionally established national monuments protecting natural and historic features. Since 1906, the president and Congress have created more than 100 national monuments. The BLM, National Park Service, U.S. Forest Service (USFS), and USFWS manage national monuments. No national monuments are within the Plan Area, although the Santa Rosa–San Jacinto Mountains National Monument is within the CDCA boundary.

I.2.1.6.2 American Indian Religious Freedom Act

This act (42 U.S.C. 1996) recognizes that freedom of religion for all people is an inherent right and that traditional American Indian religions are an indispensable and irreplaceable part of Indian life. Establishing federal policy to protect and preserve the inherent right of religious freedom for Native Americans, this act requires federal agencies to evaluate their actions and policies to determine if changes should be made to protect and preserve the religious cultural rights and practices of Native Americans. Such evaluations are made in consultation with native traditional religious leaders.

I.2.1.6.3 Indian Sacred Sites

Executive Order 13007 (Indian Sacred Sites), 61 FR 26771 et seq. (1996), requires federal agencies to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions to (1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites.

I.2.1.6.4 Consultation and Coordination with Indian Tribal Governments

Executive Order 13084 (Consultation and Coordination with Indian Tribal Governments; 63 FR 27655), provides, in part, that each federal agency shall establish regular and meaningful consultation and collaboration with Indian tribal governments in developing regulatory practices on federal matters that significantly or uniquely affect their communities.

I.2.1.6.5 Secretarial Order 3175

Secretarial Order 3175 (incorporated into the Departmental Manual at 512 DM 2; DOI 1993) requires that if Department of the Interior (DOI) agency actions might impact Indian trust resources, the agency must explicitly address those potential impacts in planning and decision documents, as well as consult with the tribal government whose trust resources are potentially affected by the federal action.

I.2.1.6.6 Secretarial Order 3206

Secretarial Order 3206, American Indian Tribal Rights, Federal-Tribal Trust Responsibilities (DOI 1997 and the ESA), requires DOI agencies to consult with Indian tribes when agency actions to protect a listed species, as a result of compliance with ESA, affect or may affect Indian lands, tribal trust resources, or the exercise of American Indian tribal rights.

I.2.1.6.7 Secretarial Order 3215

Secretarial Order 3215, Principles for the Discharge of the Secretary's Trust Responsibility (DOI 2003), guides DOI officials by defining the relatively limited nature and extent of Indian trust assets, and by setting out the principles that govern the Trustee's fulfillment of the trust responsibility with respect to Indian trust assets.

I.2.1.6.8 Secretarial Order 3308

Secretarial Order 3308, Management of the National Landscape Conservation System (DOI 2010a), furthers the purpose of the Omnibus Public Land Management Act of 2009 (PL 111-11), which established the NLCS under the jurisdiction of the BLM in order to conserve, protect, and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations, and the president's initiative on America's Great Outdoors.

I.2.1.6.9 Wild and Scenic Rivers Act of 1968

Selected rivers in the United States are preserved for possessing outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. Rivers, or sections of rivers, so designated are preserved in their free-flowing condition and are not dammed or otherwise impeded. A national wild and scenic designation essentially vetoes the licensing of new hydropower projects on or directly affecting the river. It also provides very strong protection against bank and channel alterations that adversely affect river values; protects riverfront public lands from oil, gas, and mineral development; and creates a federal reserved water right to protect flow-dependent values (16 U.S.C. 1271 et seq.).

I.2.1.6.10 National Trails System Act

The National Trails System was created by the National Trails System Act (16 U.S.C. 1241 et seq.) The act created a series of National trails "to promote the preservation of, public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas and historic resources of the Nation." Specifically, the act authorized three types of trails: the National Scenic Trails, National Recreation Trails, and connecting-and-side trails. In 1978, as a result of the study of trails that were most significant for their historic associations, a fourth category of trail was added: the National Historic Trails.

National Scenic Trails. A congressionally designated trail that is a continuous and uninterrupted extended, long-distance trail so located as to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant resources, qualities, values, and associated settings and the primary use or uses of the

areas through which such trails may pass. A segment of the Pacific Crest National Scenic Trail is located within the Plan Area.

National Historic Trail. A congressionally designated trail that is an extended, long-distance trail, not necessarily managed as continuous, that follows as closely as possible and practicable the original trails or routes of travel of national historic significance. The purpose of a National Historic Trail is the identification and protection of the historic route and the historic remnants and artifacts for public use and enjoyment. A National Historic Trail is managed in a manner to protect the nationally significant resources, qualities, values, and associated settings of the areas through which such trails may pass, including the primary use or uses of the trail. Segments of the Old Spanish and Juan Bautista de Anza National Historic Trails are located within the Plan Area.

National Recreation Trail. A trail designated by the Secretary of the Interior, through a standardized process, including a recommendation and nomination by the BLM. National Recreation Trails provide a variety of compatible outdoor recreation uses in or reasonably accessible to urban areas or high-use areas. The Nadeau National Recreation Trail is located in the Plan Area.

I.2.1.6.11 Wilderness Act of 1964

Enacted in 1964, this act (PL 88–577) established the National Wilderness Preservation System of areas to be designated by Congress. It directed the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuges and National Park Systems and to recommend to the president the suitability of each such area or island for inclusion in the National Wilderness Preservation System, with final decisions made by Congress. The Secretary of Agriculture was directed to study and recommend suitable areas in the National Forest System. BLM-administered lands were brought under the direction of the Wilderness Act with the passage of FLPMA in 1976. Sections 603 and 201 of FLPMA (43 U.S.C. 1701 et seq.) also directed the BLM to conduct inventories and make recommendations to the president for suitability of areas to be included in the system.

The act provides criteria for determining suitability and establishes restrictions on activities that can be undertaken on a designated area. Criteria set by Congress within this act state that wilderness areas have the following characteristics: (1) generally appear to have been affected primarily by the forces of nature, with the imprint of human's work substantially unnoticeable; (2) outstanding opportunities for solitude or primitive and confined types of recreation; (3) at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value. The Wilderness Act also outlines accepted and prohibited uses of designated wilderness areas.

The act also sets special provisions for an agency's continuing management of existing or grandfathered rights such as mining and grazing and other agency mission-related activities. Lands acquired through donation adjacent to designated wilderness may become part of the wilderness upon completion of specific notification requirements.

I.2.1.6.12 Recreation and Public Purposes Act

This act (43 U.S.C. 869 et seq.) provides for the lease or disposal of public lands, and certain withdrawn or reserved lands, to state and local governments and qualified nonprofit organizations to be used for recreational or public purposes. Prices that are charged for land use or acquisition are normally less than market value of the specific lands. The act allows for reversion of the lands under certain conditions.

I.2.1.6.13 Surface Mining Control and Reclamation Act

This act (30 U.S.C. 1201 et seq.) establishes a program for the regulation of surface mining activities and the reclamation of coal-mined lands, under the administration of the Office of Surface Mining, Reclamation and Enforcement in the DOI.

The law sets forth minimum uniform requirements for all coal surface mining on federal and state lands, including exploration activities and the surface effects of underground mining. Mine operators are required to minimize disturbances and adverse impact on fish, wildlife, and related environmental values and achieve enhancement of such resources where practicable. Restoration of land and water resources is ranked as a priority in reclamation planning.

I.2.1.6.14 Mineral Leasing Act

This act (30 U.S.C. 181 et seq.) authorizes and governs leasing of public lands for development of deposits of coal, oil, gas and other hydrocarbons, sulfur, phosphate, potassium, and sodium.

I.2.1.6.15 Federal Onshore Oil and Gas Leasing Reform Act

An amendment to the Mineral Leasing Act, the Federal Onshore Oil and Gas Leasing Reform Act of 1987, granted the USFS the authority to make decisions and implement regulations concerning the leasing of public domain minerals on National Forest System lands containing oil and gas. The act changed the analysis process from responsive to proactive. The BLM administers the lease but USFS has more direct involvement in the leasing process for lands it administers. The act also established a requirement that all public lands available for oil and gas leasing be offered first by competitive leasing.

I.2.1.6.16 General Mining Law of 1872

This authority (30 U.S.C. 21 et seq.) sets forth rules and procedures for the exploration, location, and patenting of lode, placer, and mill site mining claims. Claimants must file notice of the original claim with the BLM as well as annual notice of intention to hold, affidavit of assessment work, or similar notice.

I.2.1.6.17 Mining and Mineral Policy Act

This act (30 U.S.C. 21a) expressed the national policy to foster and encourage private enterprise in: (1) the development of economically sound and stable domestic mining, minerals, metal, and mineral reclamation industries; (2) the orderly and economic development of domestic mineral resources, reserves, and reclamation of metals and minerals to help assure satisfaction of industrial, security, and environmental needs; (3) mining, mineral, and metallurgical research, including the use and recycling of scrap to promote the wise and efficient use of our natural and reclaimable mineral resources; (4) the study and development of methods for the disposal, control, and reclamation of mineral waste products; and (5) the reclamation of mined land, so as to lessen any adverse impact of mineral extraction and processing upon the physical environment that may result from mining or mineral activities.

I.2.1.6.18 Taylor Grazing Act

The Taylor Grazing Act of 1934 (43 U.S.C. 315) provides for two types of authorized use: (1) a grazing permit, which is a document authorizing the use of the public lands within an established grazing district; and (2) a grazing lease, which is a document authorizing the use of the public lands outside an established grazing district. A grazing district is the specific area within which the public lands are administered in accordance with Section 3 of the Taylor Grazing Act. Public lands outside grazing district boundaries are administered in accordance with Section 15 of the act.

I.2.1.6.19 Consolidated Appropriations Act, 2012

The Consolidated Appropriations Act, 2012 (PL 112-74), affects management of the BLM's livestock grazing program.

The appropriations language directs the Secretary of the Interior to accept "the donation" of any valid existing grazing permit or lease within the CDCA. The term donation in this provision is interpreted by the BLM to mean "voluntary relinquishment" of the permit or lease to graze on a public land grazing allotment and the preferential position that the permittee or lessee enjoyed, in relation to other applicants, to receive that permit or lease.

In addition to automatic termination of the relinquished permit or lease, the Secretary is directed to permanently end grazing on the land covered by the permit or lease. Designating specific areas of land as unavailable for livestock grazing is typically a land use plan decision; however, in this case Congress has directed that the lands be unavailable for livestock grazing upon relinquishment. In addition, while forage allocation is typically a land use plan decision, Congress has directed the BLM to make the land available for mitigation by allocating the forage to wildlife use.

To reflect the permanent end to grazing, to allocate the forage to wildlife use, and to bring the CDCA Plan into conformance with the Consolidated Appropriations Act, the CDCA Plan must be amended. The Consolidated Appropriations Act does not itself amend the CDCA Plan. These land use changes resulting from application of the act may be accommodated during the next scheduled plan amendment.

I.2.1.6.20 Public Rangelands Improvement Act of 1978

The Public Rangelands Improvement Act (43 U.S.C. 1901 et seq.) establishes and reaffirms the national policy and commitment to (1) inventory and identify current public rangeland conditions and trends; (2) manage, maintain, and improve the condition of public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process; and (3) charge a fee for public grazing use that is equitable. This act also continues the policy of protecting wild, free-roaming horses and burros from capture, branding, harassment, or death, while facilitating the removal and disposal of excess wild, free-roaming horses and burros that pose a threat to themselves, their habitat, and to other rangeland values.

I.2.1.6.21 Wild Free-Roaming Horses and Burros Act

The Wild Free-Roaming Horses and Burros Act, as amended (16 U.S.C. 1331 et seq.) provides that wild horses and burros shall be considered comparably with other resource values in formulating land use plans, and that management activities shall be undertaken with the goal of maintaining free-roaming behavior.

I.2.1.6.22 Executive Orders 11644 and 11989

Executive Orders 11644 (1972; 37 FR 2877) and 11989 (1997; 42 FR 26959) establish policies and procedures to ensure that off-road vehicle use shall be controlled to protect public lands.

I.2.1.6.23 Executive Order 12898

The 1994 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Executive Order 12898) requires that each federal agency consider the impacts of its programs on minority and low-income populations (49 FR 7629).

I.2.1.7 Renewable Energy Laws and Other Relevant Policies

I.2.1.7.1 Geothermal Steam Act of 1970

The Geothermal Steam Act of 1970, as amended, governs the leasing of geothermal steam and related resources on public lands (30 U.S.C. 1001 et seq.). This act authorizes the Secretary of the Interior to issue leases for the development of geothermal resources and prohibits leasing on a variety of public lands, such as those administered by the USFWS.

In accordance with the Geothermal Steam Act and the Geothermal Resources Leasing Rule (43 CFR 3201.10), the BLM may issue leases on the following "available" lands:

- Lands administered by the DOI, including public and acquired lands not withdrawn from such use.
- Lands administered by the USFS with its concurrence.
- Lands conveyed by the United States where the geothermal resources were reserved to the United States.
- Lands subject to Section 24 of the Federal Power Act, as amended (16 U.S.C. 818), with the concurrence of the Secretary of Energy.

Conversely, the BLM is prohibited from issuing leases on the following statutorily closed federal lands as defined in the Geothermal Resources Leasing Rule (43 CFR 3201.11).

- Lands where the Secretary of Interior (Secretary) has determined that issuing the lease would cause unnecessary or undue degradation of public lands and resources.
- Lands contained within a unit of the National Park System or otherwise administered by the National Park Service.
- Lands where the Secretary determines after notice and comment that geothermal operations, including exploration, development, or utilization of lands, are reasonably likely to result in a significant adverse effect on a significant thermal feature within a unit of the National Park System.
- Lands within a National Recreation Area.
- Fish hatcheries or wildlife management areas administered by the Secretary.
- Indian trust or restricted lands within or outside the boundaries of Indian reservations.
- Lands where Section 43 of the Mineral Leasing Act (30 U.S.C. 226 et seq.) prohibits geothermal leasing, including:
    - Wilderness areas or wilderness study areas administered by the BLM or other surface-management agencies.

- Lands designated by Congress as wilderness study areas, except where the statute designating the study area specifically allows leasing to continue.
- Lands within areas allocated for wilderness or further planning in Executive Communication 1504, Ninety-sixth Congress (House Document 96-119), unless such lands are allocated to uses other than wilderness by a land and resource management plan or are released to uses other than wilderness by an act of Congress.

I.2.1.7.2 Energy Policy Act of 2005

On August 8, 2005, the Energy Policy Act of 2005 (42 U.S.C. 15801 et seq.) was signed into law. Section 211 of the act states:

> It is the sense of the Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act, seek to have approved non-hydropower renewable energy projects located on the public lands with a generation capacity of at least 10,000 [MW] of electricity.

As of February 2014, the DOI has authorized 115 large-scale renewable energy projects nationwide on or involving public lands, including 27 solar facilities, 40 wind farms, and 48 geothermal plants. When completed, these projects will provide more than 16,316 MW of power. Other applications being reviewed could contribute to this goal.

I.2.1.7.3 Secretarial Order 3285A1: Renewable Energy Development by the Department of the Interior

Secretarial Order (SO) 3285A1, dated February 22, 2010, establishes the development of renewable energy as a priority for the DOI. It established a DOI-wide approach for applying scientific tools to increase understanding of climate change and to coordinate an effective response to impacts on tribes and on the land, water, ocean, fish and wildlife, and cultural heritage resources managed within the DOI. SO 3285A1 also establishes an energy and climate change task force that identifies specific zones on U.S. public lands where the DOI can facilitate a rapid and responsible move toward large-scale production of solar, wind, geothermal, and biomass energy (DOI 2010).

I.2.1.7.4 BLM Solar Energy Program

The BLM developed and issued a Solar Energy Development Policy in 2007 to address increased interest in solar energy development on BLM-administered lands and to implement goals to construct renewable energy facilities on public lands. This 2007 policy establishes procedures for processing ROW applications for solar energy development

projects on public lands administered by the BLM in accordance with the requirements of the FLPMA and the BLM's implementing regulations (43 CFR 2800), and for evaluating the feasibility of installing solar energy systems on BLM-administered facilities. This policy was updated in 2010 by two more detailed policies that establish a maximum term for authorizations, diligent development requirements, bond coverage, potential best management practices for solar energy development projects, and interim guidance on how to calculate rent for utility-scale solar energy facilities (BLM 2010a, 2010b).

The BLM and Department of Energy prepared a Solar Energy Development Programmatic EIS (Solar PEIS) to assess environmental impacts associated with the development and implementation of agency-specific programs that would facilitate environmentally responsible utility-scale solar energy development in six western states (Arizona, California, Colorado, New Mexico, Nevada, and Utah). The DOI's ROD for the Solar PEIS identified Solar Energy Zones, which are areas with few impediments to utility-scale production of solar energy where BLM will prioritize solar energy and associated transmission infrastructure development. This ROD amended the CDCA Plan, the Bishop RMP, and the Caliente RMP.

The Solar PEIS designated two Solar Energy Zones in California, both of which are within the boundaries of the Plan Area. The Imperial East Solar Energy Zone has a total area of 5,722 acres and is in southeastern Imperial County near the U.S.–Mexico border. The Riverside East Solar Energy Zone has a total area of 147,910 acres and is in southeastern Riverside County. A third Solar Energy Zone, the West Chocolate Mountains, was designated through the West Chocolate Mountains Renewable Energy Evaluation Area ROD, signed in August 2013. The West Chocolate Mountains is also within the boundaries of the Plan Area. The Solar PEIS also identified "variance" lands with solar energy resource potential that are available for application and solar energy development with additional environmental reviews and clearances. Some 576,989 acres of "variance" lands were identified in the CDCA.

The Solar PEIS also included programmatic and Solar Energy Zone-specific design features to be required for all utility-scale solar energy projects on BLM-administered lands to avoid and/or minimize adverse impacts. For information on design features, see Appendix A, Section A.4 of the ROD.

The BLM executed a Solar Programmatic Agreement (PA) on September 24, 2012. Signatories include the BLM, the Advisory Council on Historic Preservation, and State Historic Preservation Officers from Arizona, California, Colorado, Nevada, New Mexico, and Utah. The PA establishes procedures the BLM will follow to meet its Section 106 obligations under the National Historic Preservation Act for all future, site-specific solar energy applications where the BLM is the lead federal agency and the application is for projects on

public lands managed by the BLM. The PA applies to all new solar applications processed under the Final Solar Programmatic Environmental Impact Statement (BLM 2012).

I.2.1.7.5 BLM Wind Energy Program

To address increased interest in wind energy development, implement the Energy Policy Act of 2005 recommendation to increase renewable energy production, and ensure the responsible development of wind resources on BLM-administered lands, the BLM evaluated wind energy potential on public lands and established wind energy policy. To support wind energy development on public lands while minimizing potential environmental and socio-cultural impacts, the BLM established a Wind Energy Development Program that includes (1) an assessment of wind energy development potential on BLM-administered lands through 2025 (a 20-year period); (2) policies regarding the processing of wind energy development ROW authorization applications; (3) best management practices for mitigating the potential impacts of wind energy development on BLM-administered lands; and (4) amendments of specific BLM land use plans to address wind energy development.

In connection with this program, the BLM, in cooperation with the Department of Energy, prepared a programmatic EIS in 2005 to (1) assess the environmental, social, and economic impacts associated with wind energy development on BLM-administered land; and (2) evaluate a number of alternatives to determine the best management approach for the BLM to adopt in terms of mitigating potential impacts and facilitating wind energy development (BLM 2005).

I.2.1.7.6 BLM Geothermal Leasing Programmatic EIS

In October 2008, the BLM published the Final Programmatic EIS for Geothermal Leasing in the Western United States (BLM and USFS 2008). It addressed geothermal leasing on lands administered by the BLM and the USFS in 12 western states including Alaska. Specific to the BLM, the ROD of the Final Programmatic EIS approved the BLM's decision to facilitate geothermal leasing of the federal mineral estate in these 12 western states. This decision (1) allocates BLM lands as open to be considered for geothermal leasing or closed for geothermal leasing; (2) develops a reasonably foreseeable development scenario that indicates a potential for 12,210 MW of electrical generating capacity from 244 power plants by 2025, plus additional direct uses of geothermal resources; and (3) adopts stipulations, BMPs, and procedures for geothermal leasing and development on BLM-administered lands.

I.2.1.7.7 Programmatic EIS Designation of Energy Corridors on Federal Land in 11 Western States

Section 368 of the Energy Policy Act of 2005 (42 U.S.C. 15801 et seq.), enacted August 8, 2005, directs the secretaries of Agriculture, Commerce, Defense, Energy, and the Interior (the Agencies) to designate under their respective authorities corridors on federal land in 11 western states (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming) for oil, gas, and hydrogen pipelines, and electricity transmission and distribution facilities (energy corridors).

The Final PEIS was prepared by the BLM and the U.S. departments of Energy, Agriculture, and Defense as part of their work to implement Section 368 of the Energy Policy Act of 2005. The Final PEIS, released on November 28, 2008, identifies energy corridors to facilitate future siting of oil, gas, and hydrogen pipelines, as well as renewable energy development projects and electricity transmission and distribution facilities on federal lands in the West to meet the region's increasing energy demands while mitigating potential harmful effects to the environment.

Section 368 does not require that the agencies consider or approve specific projects, applications for ROWs, or other permits within designated energy corridors. Importantly, Section 368 does not direct, license, or otherwise permit any on-the-ground activity of any sort. If an applicant is interested in obtaining an authorization to site a project within any corridor designated under Section 368, the applicant would have to apply for a ROW authorization, and the Agencies would consider each application by applying appropriate project-specific reviews under requirements of laws and related regulations including, but not limited to, NEPA, the Clean Water Act, the Clean Air Act, Section 7 of the ESA, and Section 106 of the National Historic Preservation Act.

On July 7, 2009, multiple organizations filed a complaint in *Wilderness Society, et al. v. United States Department of the Interior, et al.,* No. 3:09-cv-03048-JW (N.D. Cal.). The plaintiffs raised a variety of challenges in response to the Agencies' RODs.

In July 2012, the BLM, USFS, and Department of Energy entered into a settlement agreement with the plaintiffs. One of the requirements of the agreement was that the BLM and USFS make future recommendations for revisions, deletions, and additions to the Section 368 Corridor network consistent with applicable law, regulations, agency policy, and guidance, and that they would consider the following general principles in future siting recommendations:

- Corridors are thoughtfully sited to provide maximum utility and minimum impact to the environment.
- Corridors promote efficient use of the landscape for necessary development.

- Appropriate and acceptable uses are defined for specific corridors.
- Corridors provide connectivity to renewable energy generation to the maximum extent possible while also considering other sources of generation, in order to balance the renewable sources and to ensure the safety and reliability of electricity transmission.

I.2.2 U.S. Fish and Wildlife Service

I.2.2.1 Federal Endangered Species Act

The USFWS administers the ESA. The purpose of the ESA is to provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved, and to provide a program for the conservation of such species. Under Section 7(a)(1) of the ESA, all federal agencies, including the USFWS, shall, in consultation with and with the assistance of the Secretary of the DOI, utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of listed endangered and threatened species. Under the ESA, the term "endangered species" means any species that is in danger of extinction throughout all or a significant portion of its range. The term "threatened species" means any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Section 9 of the ESA prohibits "take" of all federally listed species of wildlife, unless otherwise permitted or exempted. "Take" under Section 3 of the ESA is defined as "to harass, harm, pursue, shoot, hunt, wound, trap, capture or collect, or attempt to engage in any such conduct." "Harass" is defined by regulation as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." "Harm" is defined by regulation as "an act which actually kills or injures wildlife" and "may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering."

A Section 10(a)(1)(B) incidental take permit constitutes an exception to the taking prohibition of Section 9 for nonfederal applicants and is based on an applicant's Habitat Conservation Plan (HCP). The GCP component of the DRECP is a programmatic type of HCP that the USFWS has prepared to fulfill the federal mandatory requirements in Section 10(a)(1)(B) of the ESA and support applications for incidental take permits covering renewable energy development on nonfederal lands. Section 10(a)(1)(B) allows the issuance of permits for the incidental take of threatened or endangered wildlife species and the inclusion of unlisted species in the permit (in anticipation of their potential to be listed in the future) as long as conservation actions for these species treat

them as if they were listed (that is, meet permit issuance criteria). The definition of "incidental take" under Section 10(a)(1)(B) is take that "is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity."

Take of federally listed plant species is not prohibited on nonfederal land under the ESA, and authorization under a Section 10(a)(1)(B) permit is not required. Section 9 of the ESA, however, makes it unlawful to remove and reduce to possession, maliciously damage or destroy federally listed plants from areas under federal jurisdiction and remove or destroy such plants in knowing violation of state law. In addition, Section 7(a)(2) of the ESA prohibits federal agencies from jeopardizing the continued existence of any listed plant or animal species, or destroying or adversely modifying the critical habitat of such species. Federally listed plant species are included in the DRECP and EIR/EIS in recognition of the conservation benefits to be provided for them under the plan and the assurances incidental take permit holders would receive if plants were included on the permit. If permits are issued to applicants under the proposed GCP, the permittees would receive "No Surprises" assurances for all plant and animal species on nonfederal lands covered by their permits under the USFWS's "No Surprises" regulation (50 CFR 17.22(b)(5) and 17.32(b)(5)).

According to Section 10(a)(2)(A) of the ESA, the CEC and the California State Lands Commission (CSLC) are submitting to the USFWS separate applications for incidental take permits under the GCP for renewable energy projects under CEC jurisdiction on nonfederal lands and within CSLC's existing land ownership. In addition, the USFWS also would consider issuance of future Section 10(a)(1)(B) permits to individual applicants or local jurisdictions that apply for incidental take authorization for renewable energy projects on nonfederal lands that are consistent with the USFWS proposed GCP.

The USFWS proposed GCP identifies the following mandatory elements of an HCP:

- The impact that will likely result from the proposed taking.
- Measures the applicant will take to monitor, minimize, and mitigate such impacts; the funding that will be made available to implement such measures; and the procedures to deal with Changed Circumstances and Unforeseen Circumstances.
- Alternative actions to such taking the applicant considered and the reasons why such alternatives are not proposed.
- Additional measures the USFWS may require as necessary or appropriate for purposes of the HCP.

The USFWS will decide whether to issue or deny Section 10(a)(1)(B) incidental take permits, based on the USFWS approval of the proposed GCP, after an opportunity for public comment. The USFWS may choose to (1) issue permits conditioned on an application's consistency with the terms and conditions of the GCP, (2) issue permits conditioned an

application's consistency with the GCP together with other measures specified by the USFWS, or (3) deny permits. The decision to issue incidental take permits is based on whether the GCP, and applications for permits under the GCP, comply with the following issuance criteria (50 CFR 17.22[b][2] and 50 CFR 17.21[b][2]):

- The taking will be incidental.
- The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking.
- The applicant will ensure that adequate funding for the HCP will be provided and procedures are in place to deal with Unforeseen Circumstances.
- The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.
- Other measures required as necessary or appropriate for the purposes of the HCP will be met.
- The USFWS has received other assurances as it may require that the HCP will be implemented.

The GCP, like all HCPs, is required to distinguish Changed Circumstances from Unforeseen Circumstances in accordance with the HCP Assurances (No Surprises) Final Rule published in the *Federal Register* on February 23, 1998 (63 FR 8859 et seq.). The "No Surprises" policy provides assurances to permit holders that, as long as the terms and conditions of the permit issued under the GCP are being properly implemented, no commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed to in the permit would be required without the consent of the permittee, even if unforeseen circumstances arise after the permit is issued.

The USFWS also requires applicants to follow a "five-point policy" in developing HCPs (and GCPs) that focuses on the following specific components: (1) biological goals and objectives, (2) adaptive management as appropriate, (3) compliance and effectiveness monitoring, (4) appropriate permit duration, and (5) public participation. The purpose of this policy is to promote nationwide efficiency, effectiveness, and consistency in the USFWS's HCP program. The five-point policy guidance was published in the *Federal Register* (65 FR 35242 et seq., June 1, 2000) as a final addendum to the USFWS's *Handbook for Habitat Conservation Planning and Incidental Take Permitting Process* (USFWS 2000).

The GCP is the USFWS's proposed action evaluated in the EIS portion of this EIR/EIS (see Section I.3.3, General Conservation Plan Planning Process). The GCP provides a framework for streamlining future permit decisions after the overall interagency DRECP is approved. The USFWS Director signed a Final General Conservation Plan Policy on October 5, 2007

(USFWS 2007). A GCP is an "umbrella" type of programmatic HCP that the USFWS develops for adoption by subsequent interested parties who then apply for incidental take permits consistent with the GCP. The development of the GCP is undertaken by the USFWS, rather than by an individual applicant, and in this case is based on the DRECP's comprehensive conservation strategy for Covered Species. A GCP includes all the necessary information that a traditional HCP contains to demonstrate compliance with ESA issuance criteria. However, because the proposed GCP is not linked to any applicants, USFWS would not issue any incidental take permits under the GCP in conjunction with any ROD for the final DRECP and EIR/EIS.

If the GCP is approved and the ROD is signed, the USFWS would consider issuing future Section 10(a)(1)(B) permits for the incidental take of Covered Species resulting from renewable energy development on nonfederal lands within the DRECP's GCP Permit Area (see Section I.0.3.1.2, DRECP Permit Areas). USFWS would decide whether to issue individual permits to future GCP applicants through a streamlined application process. Applicants would need to complete an application form, pay the application fee, and demonstrate compliance with the terms and conditions of the GCP. Upon completing these three items, applicants may then be granted individual permits, subject to a determination of eligibility pursuant to 50 CFR 13.21(c) and completion of any administrative or noticing requirements.

Any future permits issued under the GCP would be severable, that is, the conservation benefits of the GCP would not depend on any one permittee. Furthermore, each applicant issued a severable permit under the GCP would receive "No Surprises" assurances with the permit. Under this process, USFWS would provide quarterly public notices in the *Federal Register* of permits issued under the GCP. Future renewable energy proponents may choose to apply for permits under the GCP or to develop their own plans using the traditional HCP process that would not incorporate the streamlined permitting process offered by the GCP.

I.2.2.2 National Environmental Policy Act

Issuance of incidental take permits under Section 10(a)(1)(B) is a federal action (by the USFWS) subject to NEPA compliance. Although ESA and NEPA requirements overlap considerably, the scope of NEPA goes beyond that of the ESA by considering the impacts of a federal action not only on fish and wildlife resources, but also on other resources such as water quality, socioeconomics, air quality, and cultural resources.

See Section I.2.1.2 for a discussion of additional NEPA requirements.

I.2.2.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 et seq.), is the domestic law that affirms, or implements, the United States' commitment to four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource. Each of the conventions protect selected species of birds common to both countries (that is, they occur in both countries at some point during their annual life cycle). The MBTA protects migratory birds and their nests, eggs, young, and parts from possession, sale, purchase, barter, transport, import, export, and take. For purposes of the MBTA, take is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR 10.12). It is a strict liability statute wherein proof of intent is not an element of a taking violation. The MBTA applies to migratory birds identified in 50 CFR 10.13.

In general, the MBTA protects all birds occurring in the United States except for house (English) sparrow (*Passer domesticus*), European starlings (*Sturnus vulgaris*), rock doves (pigeons; *Columba livia*), any recently listed unprotected species in the *Federal Register*, and non-migratory upland game birds. The USFWS has regulatory authority over implementation and enforcement of the MBTA. For species listed under both the ESA and MBTA, the USFWS has the authority to authorize incidental take with special terms and conditions under Section 10(a)(1)(B) of the ESA and have this permit also serve as a Special Purpose Permit under the MBTA (50 CFR 21.27). Special Purpose Permits are required in the event that an action would take, possess, or involve the sale or transport of birds protected by the MBTA. The Plan's GCP would consider how to incorporate an MBTA Special Purpose Permit into any 10(a)(1)(B) permit for ESA-listed species that are also protected by the MBTA. If any Section 10(a)(1)(B) permit is issued, any such take would not be in violation of the MBTA.

I.2.2.4 Bald and Golden Eagle Protection Act of 1940, as Amended

The Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668 et seq.) is the primary law protecting bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*). "Take" under this statute is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb." "Disturb" is defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR 22.3).

In 2009, the USFWS promulgated a new permit rule under the Eagle Act that provides a mechanism to authorize unintentional take of eagles (50 CFR 22.26). Under this new rule, the USFWS can issue permits that authorize individual instances of take of bald and golden eagles

when the take is associated with, but not the purpose of, an otherwise lawful activity, and cannot be practicably avoided. The regulations also authorize permits for "programmatic" take, where take of eagles is anticipated to be (1) recurring, but not caused solely by indirect effects; and (2) occurring over the long term and/or in a location or locations that cannot be specifically identified, such as that associated with turbine operations for wind energy generation. However, under the regulations, any ongoing or programmatic take authorized must be unavoidable, even after the implementation of advanced conservation practices intended to avoid and minimize take. Project developers and operators are not legally required to seek or obtain an eagle take permit. However, the take of an eagle without a permit is a violation of the Eagle Act and could result in prosecution.

Eagle take permits may be issued only in compliance with the conservation standards of the Eagle Act. This means the take must be compatible with the preservation of each species, defined as "consistent with the goal of stable or increasing breeding populations" (74 FR 46836). A permit to take eagles under an ESA Section 10(a)(1)(B) permit can be issued when eagles are covered under an associated HCP or GCP as a Covered Species. Such a permit confers take authority under the Eagle Act because 50 CFR 22.11 extends Eagle Act take authorization to ESA permits that cover eagles. The provisions of 50 CFR 22.11 are predicated on the premise that Eagle Act standards for permitting take must be satisfied before take can be permitted under an ESA permit. Therefore, the avoidance, minimization, and other mitigation measures in the HCP or GCP project description, and permit terms and conditions, must meet the Eagle Act permit issuance criteria of 50 CFR 22.26.

For unintentional take of eagles that would occur under the DRECP, the USFWS must determine whether to authorize take of golden eagles under the regulatory provisions of the Eagle Act, either through an ESA Section 10(a)(1)(B) permit (for take resulting from Covered Activities on nonfederal lands) or through a take permit under the Eagle Act (for take resulting from Covered Activities on federal lands).

USFWS will authorize take of bald or golden eagles only if it is determined that the take (1) is compatible with the preservation of the bald eagle and the golden eagle and (2) cannot practicably be avoided. For purposes of these regulations, "compatible with the reservation of the bald eagle or the golden eagle" means "consistent with the goal of stable or increasing breeding populations."

Unintentional take permit issuance criteria are defined in the Eagle Act permit implementing regulations (50 CFR 22.26). The USFWS must find that all of the following criteria are met:

- The direct and indirect effects of the take and required mitigation, together with the cumulative effects of other permitted take and additional factors affecting eagle populations, are compatible with the preservation of bald eagles and golden eagles.

- The taking is necessary to protect a legitimate interest in a particular locality.
- The taking is associated with, but not the purpose of, the activity.
- The taking cannot practicably be avoided; or for programmatic authorizations, the take is unavoidable.
- The applicant has avoided and minimized impacts to eagles to the extent practicable, and for programmatic authorizations, the take will occur despite application of advanced conservation practices.
- Issuance of the permit will not preclude issuance of another permit necessary to protect an interest of higher priority as set forth in 50 CFR 22.26(e)(4).

I.2.2.5 National Historic Preservation Act

See Section I.2.1.4 for a description of the National Historic Preservation Act of 1966.

The issuance of incidental take permits under the GCP component of the DRECP and EIR/EIS would be a USFWS undertaking subject to Section 106 of the National Historic Preservation Act.

I.2.3 California Energy Commission

I.2.3.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA; 14 California Code of Regulations [CCR] 15000 et seq.) requires a public agency that proposes to carry out, approve, or fund a project to analyze the project's impacts on the environment and, if significant environmental effects are identified, to adopt feasible mitigation measures or project alternatives that would avoid or substantially lessen the project's significant impacts. If a project's environmental impacts cannot be feasibly avoided or mitigated to a less-than–significant level, then CEQA prohibits the agency from approving, carrying out, or funding the project unless the agency determines in a statement of overriding considerations that the project's specific economic, legal, social, technological, or other benefits outweigh its significant environmental consequences.

The CEC's adoption of the DRECP would be an action subject to CEQA. The CEC is serving as the lead agency under CEQA. As lead agency, CEC is primarily responsible for preparing the CEQA environmental analysis contained in the EIR/EIS and certifying that the final document complies with CEQA requirements.

I.2.3.2 Warren-Alquist Act

In 1974, the Warren-Alquist Act (California Public Resources Code, Section 25000 et seq.) created and gave statutory authority to the CEC. The act designates the CEC as the state's primary agency for energy policy and planning. The CEC has six basic responsibilities:

1. Forecast future energy needs.
2. Promote energy efficiency and conservation by setting the state's appliance and building efficiency standards.
3. Support public interest energy research that advances energy science and technology through research, development, and demonstration programs.
4. Develop renewable energy resources and alternative renewable energy technologies for buildings, industry, and transportation.
5. License thermal power plants 50 MW or larger.
6. Plan for and direct state response to energy emergencies.

Forecasts of future demand for electricity are essential to ensure that California builds the power plants, transmission lines, and related facilities needed to provide reliable and affordable energy to its residents, businesses, and industries.

CEC has exclusive authority under California law to certify (license) energy facilities that are thermal power plants with a generating capacity of 50 MW or more and related facilities (California Public Resources Code, Section 25500). Related facilities under CEC's jurisdiction include structures that are appurtenant to the power plant itself, such as natural gas and water supply lines, generation-interconnection transmission lines from the plant, storage tanks, and roads. CEC does not have licensing authority over solar photovoltaic or wind generation facilities, since neither is a thermal technology.

CEC's certificate approving a power plant is in lieu of any permit or similar document that would otherwise be required by any state, local, or regional agency (California Public Resources Code, Section 25500). Before approving a power project within its jurisdiction, CEC must make findings on whether the project conforms to applicable local, regional, state, and federal standards, ordinances, and laws (California Public Resources Code, Section 25523, subdivision [d][1]). When necessary to ensure conformity with such standards, ordinances, and laws, CEC imposes conditions of certification on the project. If the project cannot be brought into conformance with local, regional, or state laws, ordinances, and standards, CEC may license it only if it first determines it is required for the public convenience and necessity, and there are not more prudent and feasible means for achieving the public convenience and necessity (California Public Resources Code, Section 25525).

Under the Warren-Alquist Act, CEC has independent authority to authorize take associated with power plant construction and operation if it is in conformity with the California Endangered Species Act (CESA) or, for projects that fall within the scope of an approved NCCP, with the terms of that NCCP. Under the Natural Community Conservation Planning Act (NCCPA), participating agencies with land use authority within an NCCP area receive take coverage through permits that the California Department of Fish and Wildlife (CDFW) issues under California Fish and Game Code Section 2835. These permits allow participating agencies to confer take authorization on a person or entity undertaking specific projects in conformity with the approved NCCP and the associated permit. Because the Warren-Alquist Act replaces the Section 2835 permitting process and provides the CEC with independent authority to issue take authorization in conformity with the terms of an approved NCCP, CEC need not and will not apply to CDFW for a Section 2835 permit under the DRECP for take associated with power plant licensing.

As part of its exclusive permitting authority, the CEC must confer with CDFW on a proposed project, including proposed mitigation measures and conditions of CEC certification, to ensure a project under CEC's jurisdiction complies with state laws and standards for the protection of biological resources. CEC will need to find that any project covered by the DRECP conforms to the terms of the DRECP once CDFW approves the plan as an NCCP.

I.2.4 California Department of Fish and Wildlife

I.2.4.1 California Endangered Species Act

CDFW administers the CESA, which, among other things, prohibits the take of plant and animal species designated by the Fish and Game Commission (Commission) as endangered, threatened, or candidates for listing as endangered or threatened in the state of California. California statutes and regulations administered and enforced by CDFW for implementation of CESA are set forth in the California Fish and Game Code and Title 14 of the CCR. "Take" is defined as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (California Fish and Game Code, Section 86). Section 2080 et seq. of the California Fish and Game Code prohibits the take of state-listed species without an incidental take permit from CDFW, or a determination by the director that a federal incidental take statement or incidental take permit is consistent with CESA (for species listed under both CESA and the federal ESA only). Furthermore, CESA's overriding purpose is to "conserve, protect, restore and enhance" endangered and threatened species and their habitats (California Fish and Game Code, Section 2052), and all state agencies, boards, and commissions have a duty to conserve such species (California Fish and Game Code, Section 2055).

CESA defines an endangered species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat,

change in habitat, over exploitation, predation, competition, or disease" (California Fish and Game Code, Section 2062). CESA defines a threatened species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts" required by CESA (California Fish and Game Code, Section 2067). CESA defines a candidate species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the Commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the Commission has published a notice of proposed regulation to add the species to either list" (California Fish and Game Code, Section 2068).

CESA authorizes the take of endangered, threatened, or candidate species if take is incidental to otherwise lawful activity and if specific criteria are met (California Fish and Game Code, Section 2081). An incidental take permit, issued pursuant to CESA, may not authorize the take of "fully protected" species, which are protected under other provisions of the California Fish and Game Code, as discussed in the following sections.

I.2.4.2 Natural Community Conservation Planning Act

The California Legislature created the NCCPA to implement broad-based, landscape-level planning that conserves and manages fish and wildlife, their habitats, and natural communities, while allowing for appropriate and compatible development and growth (California Fish and Game Code, Section 2805). The primary objective of the NCCPA is to conserve covered species and natural communities at the ecosystem scale while accommodating compatible land uses. The conservation strategy for an NCCP must avoid or minimize and mitigate the impacts of covered activities to covered species in the plan area and contribute to the recovery of those species.

When CDFW approves an NCCP, it may issue incidental take authorization pursuant to Section 2835, allowing for the taking of any covered species whose conservation and management are provided for in the plan. Section 2835 permits may be issued either to state or local agencies that are serving as plan participants and that issue permits or other approvals to project applicants or directly to individual project applicants. When CDFW approves an NCCP, incidental take authorization for covered activities within the plan area is accomplished through Section 2835 rather than through incidental take permits issued pursuant to CESA.

CDFW may also, at its discretion, provide regulatory assurances for plan participants receiving Section 2835 incidental take authorizations commensurate with long-term conservation assurances and associated implementation measures pursuant to the approved plan (California Fish and Game Code, Section 2820). CDFW must consider a

variety of factors in determining whether to provide regulatory assurances, including: (1) the level of knowledge of the status of the covered species and natural communities; (2) the adequacy of the analysis of the impacts of take on covered species; (3) the use of the best available science to make assessments about the impacts of take on covered species; (4) the reliability of mitigation strategies; (5) the appropriateness of monitoring techniques; (6) the appropriateness of the size and duration of the plan; (7) the sufficiency of the mechanisms for long-term funding of all components of the plan, including contingencies; (8) the degree of coordination and accessibility of centralized data for analysis and evaluation of the effectiveness of the plan; and (9) the degree to which a thorough range of foreseeable circumstances are considered and provided for under the adaptive management plan (California Fish and Game Code, Section 2820[f]).

To approve an NCCP, CDFW must make a series of findings and execute an implementation agreement that satisfies enumerated statutory requirements. CDFW will ultimately determine whether to adopt the DRECP as an NCCP. To approve the DRECP as an NCCP, CDFW must find, based upon substantial evidence in the record, that the NCCP:

1. Has been developed consistent with the process identified in the Planning Agreement, dated May 17, 2010.
2. Integrates Monitoring and Adaptive Management Program (MAMP) strategies that will be periodically evaluated and modified based on the information from the monitoring program and other sources, which will assist in providing for the conservation of Covered Species and ecosystems within the Plan Area.
3. Provides for the protection of habitat, natural communities, and species diversity on a landscape or ecosystem level through the creation and long-term management of habitat reserves or other measures that provide equivalent conservation of Covered Species appropriate for habitats within the Plan Area.
4. Develops reserve systems and conservation measures in the Plan Area that provide for, as needed for the conservation of species, all of the following: (a) conserving, restoring, and managing representative natural and seminatural landscapes to maintain the ecological integrity of large habitat blocks, ecosystem function, and biological diversity; (b) establishing one or more reserves or other measures that provide equivalent conservation of Covered Species within the Plan Area and linkages between them and adjacent habitat areas outside of the Plan Area; (c) protecting and maintaining habitat areas large enough to support sustainable populations of Covered Species; (d) incorporating a range of environmental gradients (such as slope, elevation, and aspect) and high habitat diversity to provide for shifting species distributions due to changed circumstances; and (e) sustaining the effective movement and interchange of organisms between habitat areas in a manner that maintains the ecological integrity of the habitat areas within the Plan Area.

5. Identifies activities, and any restrictions on those activities, allowed within reserve areas that are compatible with the conservation of species, habitats, natural communities, and their associated ecological functions.
6. Contains specific conservation measures that meet the biological needs of Covered Species and that are based upon the best available scientific information regarding the status of Covered Species and the impacts of permitted activities on those species.
7. Contains a monitoring program.
8. Contains a Monitoring and Adaptive Management Program.
9. Includes the estimated timeframe and process by which the reserves or other conservation measures are to be implemented, including obligations of landowners and NCCP signatories and consequences of the failure to acquire lands in a timely manner.
10. Contains provisions that ensure adequate funding to carry out the conservation actions identified in the NCCP (California Fish and Game Code, Section 2820[a]).

Concurrent with approving the DRECP as an NCCP, pursuant to the requirements of California Fish and Game Code, Section 2820(b), CDFW must also execute an implementation agreement that contains provisions to accomplish all of the following:

1. Define species coverage, including any conditions of coverage.
2. Establish the long-term protection of any habitat reserve or other measures that provide equivalent conservation of Covered Species.
3. Provide for the suspension or revocation of any Section 2835 permits, in whole or in part, if specified terms or conditions are violated. CDFW shall include a provision requiring notification to the permittee of a specified period of time to cure any default prior to suspension or revocation of the permit in whole or in part. These terms and conditions shall address, but are not limited to, provisions specifying the actions CDFW shall take under all of the following circumstances: (a) if the permittee fails to provide adequate funding; (b) if the permittee fails to maintain the rough proportionality between impacts on habitat or Covered Species and conservation measures; (c) if the permittee adopts, amends, or approves any plan or project without the concurrence of CDFW that is inconsistent with the objectives and requirements of the approved NCCP; and (d) if the level of take exceeds that authorized by the permit.
4. Specify procedures for amendment of the plan and the implementation agreement.
5. Ensure implementation of the Monitoring and Adaptive Management Program.
6. Provide for oversight of plan implementation for purposes of assessing mitigation performance, funding, and habitat protection measures.
7. Provide for periodic reporting to CDFW and the public for purposes of information and evaluation of Plan progress.

8. Provide mechanisms to ensure adequate funding to carry out the conservation actions identified in the Plan.
9. Ensure that implementation of mitigation and conservation measures on a plan basis is roughly proportional in time and extent to the impact on habitat or Covered Species authorized under the Plan. These provisions shall identify the conservation measures, including assembly of reserves where appropriate and implementation of monitoring and management activities, that will be maintained or carried out in rough proportion to the impact on habitat or Covered Species and the measurements that will be used to determine if this is occurring (California Fish and Game Code, Section 2820[b]).

I.2.4.3 Lake and Streambed Alteration Agreement

CDFW has jurisdictional authority over streams and lakes and wetland resources associated with these aquatic systems (California Fish and Game Code, Section 1600 et seq.). CDFW has the authority to regulate work that will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake." Such work activities of any person, state, or local governmental agency, or public utility are regulated by CDFW (California Fish and Game Code, Section 1602). All rivers, streams, and lakes in the state, including all forms of ephemeral desert washes and tributary systems, are subject to these requirements.

CDFW enters into a streambed or lakebed alteration agreement with a project proponent after proposing measures in the agreement to protect fish and wildlife resources that may be substantially adversely impacted by the project. CDFW includes under its jurisdiction habitats that may not qualify as wetlands under the federal Clean Water Act definition (33 U.S.C. 1251 et seq.), and therefore has jurisdiction over larger areas of the desert than those under U.S. Army Corp of Engineers jurisdiction.

A project proponent must submit a notification of streambed alteration to CDFW before undertaking the alteration. The notification requires an application fee according to the specific fee schedule determined by CDFW.

CDFW can enter into streambed alteration agreements that cover recurring operation and maintenance activities and also enter into long-term agreements to cover development and other activities described in regional plans.

I.2.4.4 Other Wildlife Protection Regulations and Statutes

California Fish and Game Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) designate certain species as fully protected and provide that

those species may not be taken or possessed except pursuant to an approved NCCP or a permit from CDFW for "necessary scientific research, including efforts to recover fully protected, threatened, or endangered species." CDFW cannot authorize take or possession of fully protected species for necessary scientific research if that research is conducted in connection with mitigation for a project (California Fish and Game Code, Sections 3511, 4700, 5050, and 5515). If the NCCP component of the DRECP is approved by CDFW, CDFW and CEC will be able to authorize incidental take of any fully protected species that are included as Covered Species whose conservation and management is provided for in the NCCP (California Fish and Game Code, Sections 2835, 3511, 4700, 5050, and 5515).

In addition to CESA and Section 3511, the California Fish and Game Code includes other provisions for protection of birds, nests, and eggs. It is generally unlawful to take, possess, or needlessly destroy the nests or eggs of any bird and to take or possess any migratory nongame bird designated in the MBTA, except as allowed by the MBTA (California Fish and Game Code, Sections 3503 and 3513). It is unlawful to take, possess, or destroy any birds of prey, or to take, possess, or destroy nests or eggs of such birds (California Fish and Game Code, Section 3503.5). Birds of prey refer to species in the orders Falconiformes and Strigiformes.

The California Native Plant Protection Act of 1997 states:

> No person shall import into this state, or take, possess, or sell within this state, except as incident to the possession or sale of the real property on which the plant is growing, any native plant, or any part or product thereof, that the [California Fish and Game Commission] determines to be an endangered native plant or rare native plant (California Fish and Game Code, Section 1900 et seq.).

The act contains several narrow exceptions relating to agricultural operations or management practices, timber operations, mining assessment work, or removal of endangered or rare native plants from a canal, lateral ditch, building site, or road or other ROW.

Additionally, the California Desert Native Plants Act (Food and Agricultural Code Section 80001 et seq.) prohibits the harvest, transport, sale, or possession of specific native desert plants unless a person has a valid permit or wood receipt, and the required tags and seals. Unlike the other statutes discussed herein relating to the protection of fish, wildlife, and plants under California law, the California Desert Native Plants Act is administered by the California Department of Food and Agriculture, not CDFW.

I.2.5 California State Lands Commission

I.2.5.1 School Land Bank Act of 1984

In 1853, the U.S. Congress granted to the state of California approximately 5.5 million acres of land, generally the 16th and 36th section of every township and range in the state, for the specific purpose of supporting public schools. These lands are commonly referred to as "school lands." Over the years, most of those lands were sold. In 1984, the state Legislature passed the School Land Bank Act (California Public Resources Code, Section 8700 et seq.), which established the School Land Bank Fund and appointed the CSLC as its trustee. The School Land Bank Act directed the CSLC to develop school lands into a permanent and productive resource base for revenue generating purposes. Today, the CSLC manages approximately 468,600 acres of school lands held in fee ownership by the State of California and the reserved mineral interests on an additional approximate 790,000 acres statewide where the surface estates have been sold. Approximately 340,533 acres of fee-owned school lands are within the DRECP boundary. The CSLC is required to deposit revenue from school lands into the state treasury for the benefit of the State Teachers' Retirement Fund.

The CSLC negotiates leases for development of school lands consistent with the statutory directives discussed above and consistent with any additional policy directives deemed appropriate by the commissioners. Specifically, the CSLC is committed to the environmentally responsible use of school lands for renewable energy projects (see the *Resolution by the California State Lands Commission Supporting the Environmentally Responsible Development of School Lands Under the Commission's Jurisdiction for Renewable Energy Related Projects* adopted by the CSLC on October 16, 2008 (CSLC 2008). As a result, the CSLC's emphasis in administering school lands has been: (1) maximization of revenues from school lands' assets, (2) protection of the corpus of the trust, and (3) protection of the environment and compliance with CEQA.

I.2.5.2 Sovereign Land Jurisdiction

The CSLC also has jurisdiction and management authority over the beds and banks of navigable lakes and waterways. These sovereign lands are subject to the protections of the Common Law Public Trust. Sovereign lands under the jurisdiction of the CSLC in the Plan Area include the Colorado River and Owens Lake. Although CSLC is generally prohibited from alienating sovereign lands, CSLC negotiates leases of these lands where appropriate and beneficial to the people of the State of California, and where activities are determined by the CSLC to be not inconsistent with the Public Trust. Nothing in the DRECP and EIR/EIS should be construed to infringe on the CSLC's jurisdiction over the State of California sovereign lands.

I.2.5.3 State Mineral Resources

California Public Resources Code Section 6401 reserves California's mineral resources to the state. Unless a sale or exchange is with the federal government, the state is prohibited from relinquishing its rights to geothermal resources, oil, gas, oil shale, coal, phosphate, sodium, gold, silver, and all other mineral deposits in all lands owned or acquired by the state. State land sales are subject to a reservation of all mineral rights, a reservation of right of entry to prospect for and extract mineral deposits, fluids, or geothermal resources. The prospector or developer must compensate the surface estate owner for any damages to crops or permanent improvements resulting from resource removal.

I.2.5.4 Geothermal Resource Jurisdiction

The exploration and extraction of geothermal resources are under the jurisdiction of the CSLC. The geothermal program involves negotiation of lease terms, verification of production and royalty, review of exploration and development plans, review of individual well drilling programs, and on-site inspection of daily lease operations. Upon nomination, the CSLC may designate state lands for lease by competitive bidding to the highest responsible qualified bidder. Such nominations may be made by holders of exploration permits or any other party qualified to hold a lease (California Public Resources Code, Section 6108).

INTENTIONALLY LEFT BLANK

I.3 PLANNING PROCESS

I.3.1 Bureau of Land Management Land Use Planning Process

I.3.1.1 Planning Criteria

In accordance with Bureau of Land Management (BLM) planning regulations (43 Code of Federal Regulations [CFR] 1610.4-2) for BLM-administered lands, the BLM developed planning criteria to help guide data collection, alternative formulation, and impact analysis. The following criteria define the decision space or "sideboards" that define the scope of the planning effort and are based on laws, regulations, and agency guidance, serving to keep the planning process focused.

- The Environmental Impact Statement (EIS) portion of this document and land use plan amendments will be completed in compliance with the Federal Land Policy and Management Act (FLPMA), Endangered Species Act (ESA), National Environmental Policy Act (NEPA), Omnibus Public Lands Management Act of 2009, National Historic Preservation Act of 1966, and all other applicable federal laws, proclamations, legislative designations, executive orders, court orders, and management policies of the BLM.
- The DRECP is primarily driven by the need to accommodate renewable energy development and biological resource conservation. The effect of decisions on renewable energy and biological resource conservation affects other resources, uses, and values, including but not limited to physical, cultural, social, and scenic values, and uses such as land use authorizations, recreation, and mineral development within the DRECP area. In order to appropriately conserve these other resources and uses, decisions will be made on these other resources to respond to the effect on them from renewable energy development and biological resource conservation. Planning decisions will respond to changes in renewable energy and biological resource management.
- Resources, uses, and values not affected in any way by renewable energy and biological resource management are outside the scope of this Land Use Plan Amendment (LUPA). These resources, uses, and values will continue to be managed pursuant to the existing BLM land management plans, including the California Desert Conservation Area (CDCA) Plan of 1980 as amended, the Caliente Resource Management Plan (RMP), and Bishop RMP.
- The BLM will continue to manage resources and uses on BLM-administered lands by existing land use planning decisions unless specifically amended by the Record of Decision (ROD) for the LUPA and EIS component of this document.

- The BLM land use plan and resource management plans, as amended, will recognize valid existing rights (e.g., mining claims).
- The BLM will coordinate with local, state, tribal, and federal agencies during the EIS process to strive for consistency with existing plans and policies, to the extent consistent with federal law and the purposes of FLPMA. Pursuant to FLPMA, states are authorized to furnish advice to the Secretary of the Department of the Interior with respect to the development and revision of land use plans, land use guidelines, land use rules, and land use regulations for the public lands and with respect to such other land use matters as may be referred to them by the Secretary.
- The BLM decisions will be consistent and compatible with the existing Lower Colorado River Multiple Species Conservation Program and the Coachella Valley Multiple Species Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP), to the extent the HCP and NCCP are consistent with federal law and FLPMA.
- The BLM decisions will be consistent and compatible with the NCCP and General Conservation Plan (GCP) decisions made by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS), respectively, in responding to permit applications based on the DRECP's NCCP and GCP components, to the extent the NCCP and GCP are consistent with federal law and FLPMA.
- The BLM will coordinate with tribal governments and will provide strategies for the protection of recognized traditional uses in the EIS process, consistent with other planning criteria and in accordance with the purpose and need for the DRECP.
- The BLM will take into account appropriate protection and management of special-status plant and animal species on BLM-administered lands in the EIS and will engage in all required consultation under federal law, including any take permits necessary under the Bald and Golden Eagle Protection Act for golden eagles affected by Covered Activities.
- The BLM will take into account appropriate protection and management of cultural resources on BLM-administered lands in the EIS and will engage in all required consultation.
- The BLM will recognize existing National Landscape Conservation System (NLCS) designations, and BLM decisions will be consistent and compatible with the values for which the special designations were established.
- The BLM will recognize in the EIS the specific niche occupied by public lands in the life of the communities that surround them or that are surrounded by them and in the nation as a whole.
- The BLM will encourage public participation throughout the process.

- Environmental protection; promotion of physical, cultural, social, and scenic values; and energy production are all desirable and necessary objectives of sound land management practices and are not to be considered mutually exclusive priorities.
- The BLM will support planning to provide renewable energy opportunities to help meet public consumptive uses that contribute to climate change.
- Under constitutional principles, federal law, and regulation, and through policy implemented over significant periods of time, BLM is responsible for managing public land resources, including species and species habitat on public land. The BLM's decision on the LUPA portion of the DRECP is not constrained or determined by any other agency's action, except as required by federal law, such as the ESA.
- As described earlier, however, the BLM is coordinating with the other agencies and is directed by statute to consider other federal, state, local, and tribal programs and policies. The BLM will secure an ESA Section 7 biological opinion for its land use plan amendments, but as a federal agency, it is not an applicant for or recipient of permits from the state under the California Endangered Species Act (CESA) or the Natural Community Conservation Planning Act (NCCPA).

I.3.1.2 Types of Land Use Plan Decisions

Land use plan decisions for public lands fall into two categories: (1) desired outcomes (goals and objectives) and (2) allowable uses (including restricted or prohibited uses) and actions anticipated to achieve desired outcomes (management actions). Goals are broad statements of desired outcomes (e.g., maintain ecosystem health and productivity, promote community stability, ensure sustainable development) that usually are not quantifiable. Objectives identify specific desired outcomes for resources. Objectives are usually quantifiable and measurable. Desired future conditions can be identified in goals or objectives.

After establishing desired outcomes, the BLM identifies allowable uses for land use allocations and management actions that are anticipated to achieve these goals and objectives. "Allowable uses" is an umbrella term that defines what uses are allowable, restricted, or prohibited on certain land use allocations or areas, including subsurface mineral estate managed by the BLM. Management actions are proactive measures that will enhance resource values and can include but are not limited to resource restoration projects, daily activities, and administrative designations such as Areas of Critical Environmental Concern (ACECs) and, in the CDCA, NLCS lands.

The CDCA Plan (1980, as amended), as well as the Bishop and Caliente RMPs, establish goals and objectives, allowable uses, and management actions that will remain valid unless they are amended in the ROD.

I.3.1.3 Site-Specific Implementation Decisions and Requirements for Further Environmental Analysis

The BLM decisions evaluated in the portions of the DRECP that constitute the EIS are land use plan decisions that would guide and inform future renewable energy development and resource conservation on public (federal) lands in the Plan Area. Land use plan decisions are subject to protest to the Director under the planning regulations at 43 CFR 1610.5-2. The decisions would not authorize any specific projects or imply such approval. Any future projects would still require additional site-specific environmental analysis and a separate land use authorization such as a right-of-way grant or lease.

Implementation decisions generally relate to on-the-ground actions that BLM approves. These types of decisions generally require site-specific NEPA analysis. When the BLM considers an application, the BLM decision maker must determine if it would conform to the applicable land use plan (43 CFR 1610.5-3; Department of the Interior 2008) and what level or type of environmental documentation or analysis is required in accordance with NEPA. The BLM would retain the discretion to deny renewable energy right-of-way applications, along with geothermal leases and post-lease development, based on site-specific issues and concerns, even in areas identified as Development Focus Areas (DFAs) and Solar Energy Zones. The public would have opportunities to participate and comment during the NEPA process.

Unlike land use plan decisions, implementation decisions are not subject to protest under the planning regulations. Most implementation decisions are subject to various administrative remedies, particularly appeals to the Office of Hearing and Appeals (Interior Board of Land Appeals) unless otherwise specified by law or regulation.

I.3.1.4 Integration with the Conservation Planning Process

In addition to the BLM LUPA-specific planning criteria, types of land use plan decisions, and future site-specific implementation decisions, the BLM LUPA planning process is integrated with the conservation planning process for the DRECP. The planning criteria noted in Section I.3.1.1 recognize that the DRECP is primarily driven by the need to accommodate renewable energy development and biological resource conservation, as well as the effects of agency decisions related to those two resources on other resources, uses, and values. The proposed conservation lands designations in the LUPA have been coordinated with the biological conservation planning process and identification of the reserve design envelope as described in Section I.3.4, and renewable energy development areas identified on BLM lands have been coordinated with identification of DFAs as part of the DRECP renewable energy development planning process.

I.3.2 Natural Community Conservation Plan Planning Process

This section provides a description of the planning process used to develop the NCCP. Exhibit I.3-1a and I.3-1b illustrate the concepts and definitions of the NCCP. The NCCP includes an NCCP Conceptual Plan-Wide Reserve Design and a DRECP NCCP Reserve Design, and the approach to developing these is described in Sections I.3.2.1 and I.3.2.2.

I.3.2.1 Approach to the NCCP Conceptual Plan-Wide Reserve Design

The DRECP Plan-Wide Conservation Strategy is the Plan-wide description of how to achieve Plan-wide BGOs in the Plan Area. The Plan-wide BGOs, biological Conservation Planning Areas, biological Conservation Priority Areas, BLM Conservation Lands, and DRECP biological conservations actions are the essential elements of the DRECP Plan-Wide Conservation Strategy. The NCCP Conceptual Plan-Wide Reserve Design is the envelope defining high-priority resources needing the most durable protection and management. This envelope includes the Legislatively and Legally Protected Areas (LLPAs), BLM LUPA conservation designation lands with durability tools and/or management agreement, and biological Conservation Priority Areas on non-BLM lands. The NCCP Conceptual Plan-Wide Reserve Design reflects the highest priority areas for the creation and long-term management of habitat reserves for the conservation of the 37 proposed Covered Species and representative examples of the natural communities and processes that support the Covered Species in the Plan Area.

The following standards and criteria were used to develop the NCCP Conceptual Plan-Wide Reserve Design:

- Conserve representative landscapes and natural communities to maintain the ecological integrity of large habitat blocks, ecosystem function, and biological diversity.
    - LLPAs and Military Expansion Mitigation Lands (MEMLs) were considered existing conservation areas and as such are and would continue to be protected and managed for natural resources, including Covered Species and the natural communities and processes that support them. The LLPAs and MEMLs formed building blocks of the NCCP Conceptual Plan-Wide Reserve Design.
    - Ecoregion subareas were used to subdivide the Plan Area into ecological units to ensure the capture of representative landscapes across the Plan Area.

- Conserve important habitat areas that also provide habitat linkages for the movement and interchange of organisms within the Plan Area and to areas outside the Plan Area.
    - Important habitat linkage areas were included in the NCCP Conceptual Plan-Wide Reserve Design using species-specific linkage information for key Covered Species, including desert tortoise (*Gopherus agassizii*), Mohave ground squirrel (*Xerospermophilus mohavensis*), and desert bighorn sheep (*Ovis canadensis nelsoni*).
    - Landscape-scale, multispecies habitat linkage information was used to identify movement corridors between habitat blocks inside and outside the Plan Area.
    - Species-specific threats and stressor information was incorporated to identify the linkage areas critical for inclusion in the NCCP Conceptual Plan-Wide Reserve Design.
- Including the NCCP Conceptual Plan-Wide Reserve Design and Biological Conservation Actions, protect and maintain habitat areas large enough and of appropriate quality to support sustainable populations and contribute to the recovery of declining or vulnerable Covered Species.
    - Resource-specific conservation strategies were developed for logical groupings of Covered Species, including:
        - Species-specific conservation strategies
        - Riparian and wetland conservation strategy
        - Dune conservation strategy
        - Plant Covered Species
        - Agricultural species conservation strategy
    - Species-specific conservation factors were considered for each of the 37 Covered Species to determine areas necessary for inclusion in the NCCP Conceptual Plan-Wide Reserve Design and Biological Conservation Actions to support sustainable populations, including:
        - Species' population trends
        - Species' stressors and threats
        - Species' distribution and density
        - Terrestrial habitat intactness
        - Climate refugia
- Include conservation of environmental gradients and areas of high habitat diversity.

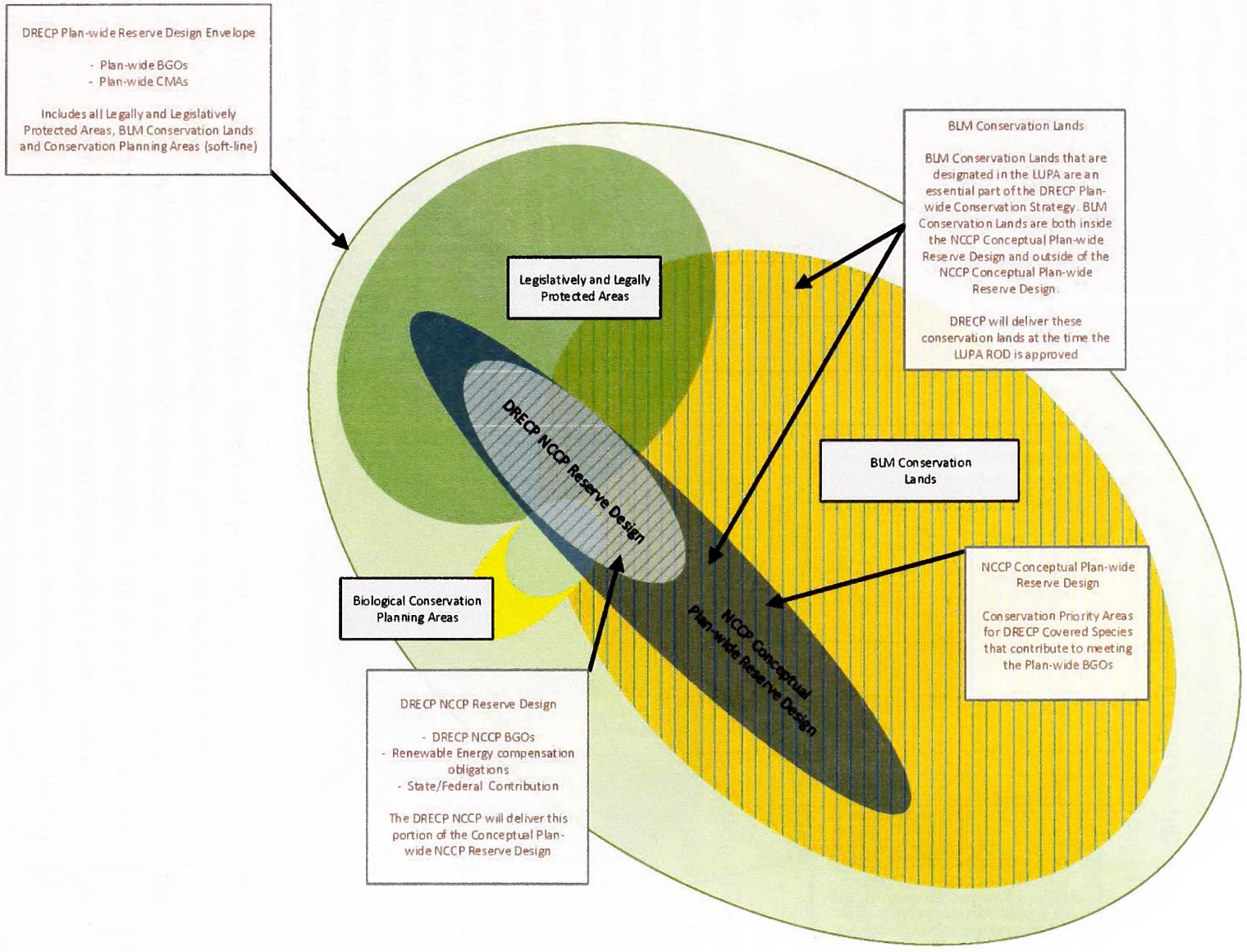


Exhibit I.3-1a DRECP and NCCP Reserve Design Concepts and Definitions

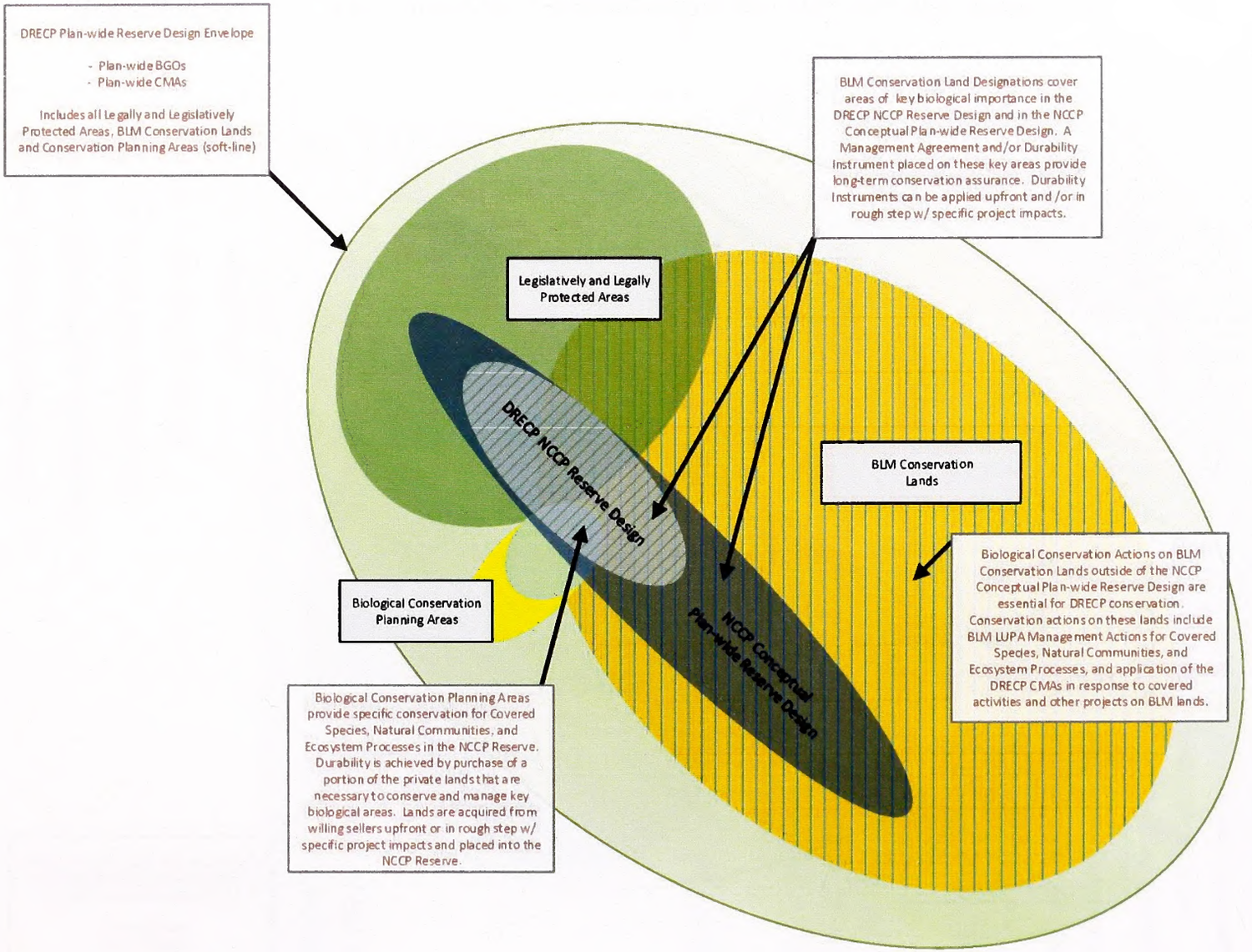


Exhibit I.3-1b DRECP and NCCP Reserve Design Durability Concepts

I.3.2.2 Approach to the DRECP NCCP Reserve Design

The DRECP NCCP addresses renewable energy and transmission Covered Activities and provides for the conservation and management of Covered Species at a scale commensurate with the scale of the impacts that will result from Covered Activities. The DRECP NCCP Reserve Design identifies priority areas for the DRECP NCCP Reserve and consists of certain BLM Conservation Designations Lands and certain biological Conservation Priority Areas. The DRECP NCCP Reserve Design is a subset of the NCCP Conceptual Plan-Wide Reserve Design, and the DRECP NCCP Reserve Design was developed using the same standards and criteria as the NCCP Conceptual Plan-Wide Reserve Design. The DRECP NCCP Reserve Design was identified based on best available information on Covered Species presence, distribution, and life history requirements, as well as the effects of Covered Activities and associated compensation requirements. Acquisition and non-acquisition compensation for the impacts of the DRECP Covered Activities would be directed primarily to areas within the DRECP NCCP Reserve Design.

I.3.3 General Conservation Plan Planning Process

The DRECP Plan-Wide Conservation Strategy is the Plan-wide description of how to achieve Plan-wide BGOs in the Plan Area. The Plan-wide BGOs, Plan-Wide Reserve Design Envelope, and Conservation and Management Actions (CMAs) are the essential elements of the DRECP Plan-Wide Conservation Strategy. The GCP contributes to the DRECP Plan-Wide Conservation Strategy through establishing a process for issuing incidental take authorizations for renewable energy and transmission projects on nonfederal lands through programmatic, strategic habitat conservation at a landscape scale. The GCP would contribute to meeting the BGOs through acquisition and non-acquisition actions (and monitoring and adaptive management) in the DRECP Conservation Area implemented as compensation for Covered Activities on nonfederal lands and by ensuring Covered Activities on nonfederal lands are implemented consistent with the avoidance and minimization actions identified in the DRECP CMAs.

This section provides a description of the GCP planning process used to develop the DRECP conservation strategy for nonfederal lands. For renewable energy development on nonfederal lands, individual project proponents, local jurisdictions, or state agencies may need incidental take authorization under Section 10(a)(1)(B) of the ESA for project-related impacts to federally listed species. Two applicants, the California Energy Commission (CEC) and California State Lands Commission (CSLC), have requested individual incidental take permits under the GCP as part of the DRECP planning process. CEC has renewable energy project licensing authority for thermal power plants that are 50 or more megawatts in size. The CSLC has landowner jurisdiction over small proportions of the nonfederal lands within the Plan Area. To provide a streamlined permitting process for CEC and CSLC, and for

future applicants who may wish to participate in the DRECP after it is approved, the USFWS is structuring the GCP component of the DRECP as an "umbrella" type of programmatic HCP. The proposed GCP and its streamlined application process are detailed in Appendix M.

The USFWS is working directly with CEC and CSLC to document how their proposed permit applications would meet issuance criteria and be consistent with the GCP component of the DRECP, and will likewise work with future applicants who wish to participate in the GCP. If, after public review of the GCP component of the draft DRECP Environmental Impact Report (EIR)/EIS, the USFWS determines issuance criteria for the GCP are met, the USFWS can issue permits to CEC and CSLC and begin considering streamlined issuance of permits to future applicants for renewable energy development proposals that are consistent with the GCP after the ROD is signed.

I.3.4 DRECP Biological Conservation Planning Process

This section describes the DRECP biological conservation planning process used to develop the DRECP biological conservation strategy, which forms the biological foundation for the BLM LUPA and the foundation of the NCCP and GCP that the CDFW and USFWS will consider for approval under the NCCPA and ESA. The DRECP biological conservation strategy is the approach for conserving Covered Species and natural communities, and the landscape and ecological processes that support them, within the Plan Area. It includes the biological elements of the BLM LUPA and addresses the impacts of proposed Covered Activities through prescribing CMAs for the renewable energy and transmission development elements of the DRECP.

The process described below focuses primarily on the biological conservation components of the planning process, but this conservation planning process was fully integrated with the BLM land use planning process described in Section I.3.1, the NCCP planning process described in Section I.3.2, the GCP planning process described in Section I.3.3, and the renewable energy planning process described in Section I.3.5. This integrated planning process, which considered all biological resources on federal and nonfederal lands and non-biological resources and uses on BLM-administered lands within the Plan Area, produced the DRECP alternatives described in Volume II of this document. The integration process included combining the biological and non-biological elements of the BLM LUPA with the biological conservation elements for the GCP and NCCP with the renewable energy planning elements to produce a single integrated planning document.

As part of the DRECP integrated planning process, scientific input and recommendations were incorporated at all stages. Early in the planning process, the DRECP Independent Science Advisors (ISA) provided written recommendations that were used to inform the DRECP biological conservation planning process (DRECP ISA 2010). During development of the profiles for the Covered Species, individual species experts provided review of the

baseline information being used for the DRECP Covered Species. In 2012, a second group of scientists was convened, the DRECP Independent Science Panel (ISP), which provided additional written recommendations for incorporating the latest science into the DRECP (DRECP ISP 2012). In late 2012 and early 2013, independent species modeling experts were gathered to review, revise, and refine the species distribution models being used for DRECP Covered Species. Appendix E provides a summary of responses to the DRECP ISA and ISP recommendations.

The biological conservation planning process included the following roughly sequential steps:

1. Establish the conservation focus (e.g., Covered Species and natural communities)
2. Gather baseline biological information
3. Identify Biological Goals and Objectives (BGOs)
4. Develop reserve design
5. Develop Conservation and Management Actions (CMAs)
6. Develop Monitoring and Adaptive Management Program (MAMP)

These biological conservation planning steps are described in Sections I.3.4.1–I.3.4.6.

I.3.4.1 Establish the Biological Conservation Focus

The biological conservation focus includes the species and natural communities that the conservation strategy would focus on conserving. Proposed Covered Species, habitats, and natural communities would be "covered" under the action alternative's conservation strategy and include those taxa addressed in the EIR/EIS for which the applicants will seek incidental take permits for Covered Activities under Section 2835 of the NCCPA and/or Section 10 of the ESA. The biological conservation focus was established through:

- DRECP Planning Agreement (May 2010)
  - Preliminary lists of natural communities and species to be considered in the initial planning focus for the DRECP were identified in the Planning Agreement developed by Renewable Energy Action Team (REAT) agencies.
- DRECP ISA recommendations (October 2010)
  - Recommendations for additions and removals from the Planning Agreement list of species were provided by the ISA.
  - Natural community classification and mapping recommendations provided by the ISA.

- Stakeholder and public input
  - Stakeholder input gathered through:
    - Regular stakeholder meetings from 2010 through 2012
    - A stakeholder member-based Covered Species Working Group and Resource Mapping Working Group
    - Comments collected on numerous early DRECP documents, including the *DRECP Draft Natural Communities and Covered Species Preliminary Description* (DRECP 2010), the *DRECP Framework Conservation Strategy Report* (Dudek and ICF 2011a), the *DRECP Preliminary Conservation Strategy* (Dudek and ICF 2011b), and the *Description and Comparative Evaluation of Draft DRECP Alternatives* (CEC et al. 2012)
- Covered and Planning Species lists and selection process
  - The proposed Covered Species list for the public review draft DRECP includes 37 covered taxa (Table I.3-1).
  - Potential species for consideration as Covered Species were selected using iterative stakeholder input and a systematic filtering process detailed in Appendix B to this document. Agencies reviewed the results of the filtering process. The agency review process resulted in modifications to the results of the filtering process that included recommendations for removal of 11 species originally identified in the filtering process for consideration as proposed Covered Species and shifting of an additional two species for consideration as proposed Covered Species to Planning Species. The list of these species and the rationale for these decisions is shown in Table I.3-2. The combination of the Appendix B filtering process and agency review (Table I.3-2) yielded the proposed Covered Species for the Draft DRECP (Table I.3-1).
  - Planning species would not be covered for take, but these species were used in the development of the conservation strategy. The planning species include burro deer (*Odocoileus hemionus eremicus*) and desert kit fox (*Vulpes macrotis arsipus*).
- Natural community mapping and classification system
  - The development of the DRECP land cover map included the collection of new mapping data in key portions of the Plan Area, development of a Plan-wide hierarchical natural community classification system, and standardization of existing mapping data in areas without new data.
  - The DRECP land cover map established both the structure and the data for characterizing the natural communities. Table I.3-3 is the list of natural communities used in developing the conservation strategy, which includes 31

natural communities within 9 general community groupings. Additional detail regarding the natural communities in the Plan Area is provided in the *Baseline Biology Report* (included as Appendix Q to this document).

Table I.3-1
Proposed Covered Species List

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNDDB[3] Conservation Status
Amphibian/Reptile				
Agassiz's desert tortoise	*Gopherus agassizii*	FT	ST	G4 S2
Flat-tailed horned lizard	*Phrynosoma mcallii*	BLM/FS	CSC	G3 S2
Mojave fringe-toed lizard	*Uma scoparia*	BLM	CSC	G3G4 S3S4
Tehachapi slender salamander	*Batrachoseps stebbinsi*	BLM/FS	ST	G2 S2
Bird				
Bendire's thrasher	*Toxostoma bendirei*	BCC/BLM	CSC	G4G5 S3
Burrowing owl	*Athene cunicularia*	BLM	CSC	G4 S2
California black rail	*Laterallus jamaicensis coturniculus*	BCC/BLM	ST/FP	G4T1 S1
California condor	*Gymnogyps californianus*	FE	SE/FP	G1 S1
Gila woodpecker	*Melanerpes uropygialis*	BLM/BCC	SE	G5 S1S2
Golden eagle	*Aquila chrysaetos*	BLM	FP	G5 S3
Greater sandhill crane	*Grus canadensis tabida*	BLM/FS	ST/FP	G5T4 S2
Least Bell's vireo	*Vireo bellii pusillus*	FE/BCC	SE	G5T2 S2
Mountain plover	*Charadrius montanus*	BCC/BLM	CSC	G2 S2?
Swainson's hawk	*Buteo swainsoni*	BLM/FS	ST	G5 S2
Tricolored blackbird	*Agelaius tricolor*	FC/BCC/BLM	CSC	G2G3 S2
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FC/FS/BCC/BLM	SE	G5T3Q S1
Willow flycatcher (including southwestern)	*Empidonax traillii* (including *extimus*)	Southwestern: FE	SE	G5 S1S2 Southwestern : G5T1T2 S1
Yuma clapper rail	*Rallus longirostris yumanensis*	FE/BCC	ST/FP	G5T3 S1
Fish				
Desert pupfish	*Cyprinodon macularius*	FE	SE	G1 S1
Mohave tui chub	*Siphateles (Gila) bicolor mohavensis*	FE	SE/FP	G4T1 S1
Owens pupfish	*Cyprinodon radiosus*	FE	SE/FP	G1 S1

Table I.3-1
Proposed Covered Species List

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNDDB[3] Conservation Status
Owens tui chub	*Siphateles (Gila) bicolor snyderi*	FE	SE	G4T1 S1
Mammal				
California leaf-nosed bat	*Macrotus californicus*	BLM/FS	CSC	G4 S2S3
Desert bighorn sheep	*Ovis canadensis nelsoni*	BLM	FP*	G4T4 S3
Mohave ground squirrel	*Xerospermophilus mohavensis*	BLM	ST	G2G3 S2S3
Pallid bat	*Antrozous pallidus*	BLM/FS	CSC	G5 S3
Townsend's big-eared bat	*Corynorhinus townsendii*	BLM/FS	CSC/ Candidate	G4 S2S3
Plant				
Alkali mariposa-lily	*Calochortus striatus*	BLM	(CRPR 1B.2)	G2 S2
Bakersfield cactus	*Opuntia basilaris* var. *treleasei*	FE	SE (CRPR 1B.1)	G5T3 S3
Barstow woolly sunflower	*Eriophyllum mohavense*	BLM	(CRPR 1B.2)	G2 S2
Desert cymopterus	*Cymopterus deserticola*	BLM	(CRPR 1B.2)	G2 S2
Little San Bernardino Mountains linanthus	*Linanthus maculatus*	BLM	(CRPR 1B.2)	G2 S2
Mojave monkeyflower	*Mimulus mohavensis*	BLM	(CRPR 1B.2)	G2 S2
Mojave tarplant	*Deinandra mohavensis*	BLM	SE (CRPR 1B.3)	G2G3 S2S3
Owens Valley checkerbloom	*Sidalcea covillei*	BLM	SE (CRPR 1B.1)	G3 S3
Parish's daisy	*Erigeron parishii*	FT	(CRPR 1B.1)	G2 S2
Triple-ribbed milk-vetch	*Astragalus tricarinatus*	FE	(CRPR 1B.2)	G1 S1

Notes:

1 Federal Status—FE: Federally Endangered; FT: Federally Threatened; FC: Federal Candidate Species; FS: Forest Service Sensitive; BLM: Bureau Land Management sensitive; BCC: Bird of Conservation Concern

2 State Status—SE: State Endangered; ST: State Threatened; CSC: California Species of Concern; FP: Fully Protected; *: limited hunting; CRPR = California Rare Plant Rank. See https://www.cnps.org/cnps/rareplants/ranking.php for an explanation of CRPRs.

3 CNDDB = California Natural Diversity Database. See http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/spplants.pdf, page v, for an explanation of these ranks.

Table I.3-2
Covered Species List Revisions Since 2013

Common Name	Scientific Name	Rationale
Planning		
Burro deer	*Odocoileus hemionus eremicus*	Widely distributed; listing not likely during permit term
Desert kit fox	*Vulpes macrotis arsipus*	Widely distributed; influenced reserve design; not a sensitive species,
Removed		
Arroyo toad	*Anaxyrus californicus*	Not likely to be affected by Covered Activities due to distribution; addressed through riparian CMAs; take can be avoided through riparian setbacks
Arizona bell's vireo	*Vireo bellii arizonae*	Operational effects only; in the Plan Area, associated with the Colorado River only, which will not be affected by the Plan
Elf owl	*Micrathene whitneyi*	Not likely to be affected by Covered Activities; distribution addressed through riparian CMAs; in the Plan Area, associated with remnant riparian areas in the Colorado River only, which will not be affected by the Plan; take can be avoided through riparian setbacks
Peninsular bighorn sheep	*Ovis canadensis nelsoni* (Peninsular Ranges Distinct Population Segment)	Not likely to be affected by Covered Activities due to distribution; primarily in LLPAs
Mojave river vole	*Microtus californicus mohavensis*	Not likely to be affected by Covered Activities due to habitat; addressed through riparian CMAs; take can be avoided through riparian setbacks
Bare-stem larkspur	*Delphinium scaposum*	Occurs in Whipple Mountains only, which would not be affected by the Plan; not likely to be affected by Covered Activities due to distribution
Cushenbury buckwheat	*Eriogonum ovalifolium* var. *vineum*	Not likely to be affected by Covered Activities; primarily confined to federal lands; avoidance surveys required on BLM lands
Flat-seeded spurge	*Chamaesyce platysperma*	Not enough baseline information for take coverage; conserved through dune CMAs
Lane mountain milk vetch	*Astragalus jaegerianus*	Primarily confined to federal lands except for 2,000 acres in-holdings within BLM ACEC and approximately 200 acres in CSLC lands; avoidance surveys required on BLM lands

Table I.3-2
Covered Species List Revisions Since 2013

Common Name	Scientific Name	Rationale
Munz's cholla	*Cylindropuntia munzii*	Occurs largely on Chocolate Mountains gunnery range (Department of Defense lands), which DRECP cannot manage; can avoid; avoidance surveys required on BLM lands
Palmer's jackass clover	*Wislizenia refracta* ssp. *palmeri*	Avoidance surveys required on BLM lands; Addressed through dunes CMAs
Parish's alkali grass	*Puccinellia parishii*	Avoidance required through wetlands CMAs; avoidance surveys required on BLM lands
Parish's phacelia	*Phacelia parishii*	Known occurrences primarily located on BLM lands; avoidance surveys required on BLM lands
White margined beardtongue	*Penstemon albomarginatus*	Minimal potential for effects by Covered Activities; primarily on BLM lands; avoidance surveys required on BLM lands

Table I.3-3
Natural Communities List

General Community Groupings	Natural Community
California forest and woodlands	Californian broadleaf forest and woodland
	Californian montane conifer forest
Chaparral and coastal scrubs (cismontane scrub)	Californian mesic chaparral
	Californian pre-montane chaparral
	Californian xeric chaparral
	Central and south coastal California seral scrub
	Central and south coastal Californian coastal sage scrub
	Western Mojave and western Sonoran Desert borderland chaparral
Desert conifer woodlands	Great Basin pinyon–juniper woodland
Desert outcrop and badlands	North American warm desert bedrock cliff and outcrop
Desert scrubs	Arizonan upland Sonoran Desert scrub
	Intermontane deep or well-drained soil scrub
	Intermontane seral shrubland
	Intermountain dry shrubland and grassland
	Intermountain mountain big sagebrush shrubland and steppe
	Lower bajada and fan Mojavean–Sonoran Desert scrub
	Mojave and Great Basin upper bajada and toeslope

Table I.3-3
Natural Communities List

General Community Groupings	Natural Community
	Shadscale–saltbush cool semi-desert scrub
	Southern Great Basin semi-desert grassland
Dunes	North American warm desert dunes and sand flats
Grasslands	California annual and perennial grassland
	California annual forb/grass vegetation
Riparian[1]	Madrean warm semi-desert wash woodland/scrub
	Mojavean semi-desert wash scrub
	Sonoran–Coloradan semi-desert wash woodland/scrub
	Southwestern North American riparian evergreen and deciduous woodland
	Southwestern North American riparian/wash scrub
Wetlands[2]	Arid west freshwater emergent marsh
	Californian warm temperate marsh/seep
	North American warm desert alkaline scrub and herb playa and wet flat
	Southwestern North American salt basin and high marsh

Notes:
1 The DRECP land cover map also includes a small acreage of "undifferentiated" riparian land cover.
2 The DRECP land cover map also includes a small intermountain basins alkaline–saline shrub wetland and Southwestern North American alkali marsh/seep vegetation and "undifferentiated" playa and open water land cover.

I.3.4.2 Gather Baseline Biological Information

Baseline biological information comes from a wide variety of sources and consists of information in the scientific literature, spatial data for Covered Species and natural communities, and a variety of other relevant physiographic geographic information system (GIS) data, including land use and ownership data, climate data, existing land management plans and conservation plans, and expert knowledge. Once the data were gathered, they were analyzed, organized, and documented, including in the following:

- Early DRECP documents (referenced in Section I.3.4.1)
- Biological resources affected environment discussion (Chapter III.7)
- DRECP *Baseline Biology Report* (Appendix Q)
  - Physical and ecological process descriptions
  - Natural community descriptions
  - Covered Species profiles and models
  - References and metadata

The gathering and use of biological information and data is an ongoing process, and biological information and data are continuously being updated and refined throughout the planning process as new data become available. The process for collecting and integrating new information through Plan implementation is also an important component of the MAMP, which is described in Section I.3.4.6.

I.3.4.3 Identify Biological Goals and Objectives

Biological goals are broad guiding principles for a biological conservation strategy. Biological objectives are biological conservation targets or conditions that articulate a desired outcome resulting from implementation of a biological conservation strategy. For the DRECP conservation planning process, the BGOs have been expressed at two levels: (1) Plan-wide BGOs and (2) Step-Down Biological Objectives (see Appendix C). These levels are described as the following:

- At the Plan-wide level, the BGOs describe the overall guiding principles, conservation targets, and conditions considered necessary to conserve the landscape and ecological processes, natural communities, and Covered Species across the Plan Area. Plan-wide BGOs are an expression of the total desired conservation for each biological resource independent from the contribution provided from DRECP implementation.
- The Step-Down Biological Objectives describe how implementation of the DRECP would contribute to meeting the Plan-wide BGOs. Because the DRECP does not address all activities and uses in the Plan Area, the DRECP cannot bear the full burden of achieving Plan-wide BGOs. For that reason, the Step-Down Biological Objectives represent the desired conservation for each biological resource that would result from DRECP implementation. The Step-Down Biological Objectives would be adopted as biological objectives of the BLM land use plans, as described in Section I.3.1, and as the biological objectives of the NCCP and GCP, as described in Sections I.3.2 and I.3.3.

A description of the BGO development process is provided in Appendix C. Table C-1 in Appendix C provides the landscape, natural community, and Covered Species BGOs. The following are key points regarding the BGO development process:

- BGO development was guided by the broad biological goals established in the DRECP Planning Agreement (May 2010):
    - Provide for the long-term conservation and management of Covered Species within the Plan Area
    - Preserve, restore, and enhance natural communities and ecosystems that support Covered Species within the Plan Area

- Stakeholders and public participation in the BGO development process was facilitated through:
  - Early DRECP documentation, including the *DRECP Preliminary Conservation Strategy* (Dudek and ICF 2011a)
  - BGOs Stakeholder Workshop (January 2012)
  - Stakeholder meeting on BGOs and Draft BGOs Memo (March 2012)
  - *Description and Comparative Evaluation of Draft DRECP Alternatives* (CEC et al. 2012)
  - Posting of preliminary draft BGOs for key species on DRECP website on April 10, May 20, and June 17, 2013
  - BGOs were developed through a synthesis of the baseline biological information (Section I.3.4.2) for the landscape elements, natural communities, and Covered Species identified as the DRECP biological conservation focus (Section I.3.4.1).
  - Covered Species and natural community distribution in the Plan Area, status and trends, life history, sensitivity to potential threats and stressors, and the potential to be affected by Covered Activities and other uses
  - Principles of conservation biology (see Appendix D, Reserve Design Development Process and Methods) and physical/ecological process information guided the establishment of landscape-scale goals focusing on reserve design, connectivity, and ecological processes.
  - The BGOs follow a three-tiered approach based on the concepts of scale and are hierarchically organized at the following levels:
    - Landscape
    - Natural community
    - Covered Species
- The primary Plan-wide goals at the landscape, natural community, and Covered Species level are stated below. These primary Plan-wide goals were the guiding vision for developing the specific Plan-wide BGOs for landscape features, natural communities, and Covered Species.
  - At the *landscape level*, the primary Plan-wide goal is to create a Plan-wide, connected, landscape-scale reserve system consisting of a mosaic of large habitat blocks of constituent natural communities that maintains ecological integrity, ecosystem function, and biological diversity, and that allows adaptation to changing conditions (including activities that are not covered by the DRECP), and includes temperature and precipitation gradients, elevation gradients, and a

diversity of geological facets to accommodate range contractions and expansions in response to climate change.

  - At the *natural community level*, the primary Plan-wide goal is to promote biodiversity and ecological function of each natural community (Table I.3-3), and to benefit native or Covered Species dependent on, or closely associated with, each natural community.
  - At the *species level*, the primary Plan-wide goal is to protect, manage, and contribute to recovery of viable self-sustaining populations of Covered Species throughout the species' distribution in the Plan Area, including conserving sufficient habitat and resources to adapt to environmental change through time.

- The Plan-wide conservation objectives typically express the desired geospatial configurations of conservation and/or desired resource conditions. The following factors were considered in developing the Plan-wide objectives:
  - Resource distribution in the Plan Area
  - Species movement and dispersal in the Plan Area
  - Population structure
  - Data quality (e.g., species occurrence data, species habitat model results, natural community mapping)
  - Expert knowledge of the resource
  - Species population trend, including stressors and threats
- The Step-Down Biological Objectives express how implementation of the DRECP would contribute to meeting the Plan-wide BGOs. The Step-Down Biological Objectives are structured to include specific objectives for the following elements of the DRECP conservation strategy for each biological resource:
  - Reserve design elements of the Step-Down Biological Objectives describe the desired conservation that would occur in existing conservation areas, BLM LUPA conservation designations on BLM-administered lands, and non-BLM lands added to the DRECP Conservation Area through DRECP implementation.
  - Avoidance and minimization elements of the Step-Down Biological Objectives describe the desired avoidance and minimization that would be implemented under the DRECP conservation strategy for biological resources associated with Covered Activities.
    - Monitoring and adaptive management elements of the Step-down Objectives describe the monitoring and management that would be implemented under the DRECP conservation strategy.

The DRECP BGOs developed through this process are provided in Table C-1 of Appendix C.

I.3.4.4 Develop Reserve Design

Drawing upon the wealth of wildlife agency, other public agency, and outside scientific and stakeholder input, the reserve design development process was a collaborative and iterative process. The multiyear process was led by REAT agency (USFWS, BLM, CDFW, and CEC) staff from state and local field offices, the CSLC, and other participating agencies (including the National Park Service and California State Parks), and focused on applying the best available data and expert knowledge to the reserve design process. Key aspects of the reserve design development process and approach are described below with additional detail provided in Appendix D.

I.3.4.4.1 Purpose of the Reserve Design Process

The primary purpose of the reserve design development process was to:

- Develop a reserve design envelope that identifies important areas for conservation in the Plan Area, outside existing protected areas, to meet Plan-wide BGOs for Covered Species, natural communities, and the associated landscape features and processes
- Fulfill relevant requirements of the NCCPA
- Identify areas not important for the conservation of Covered Species, natural communities, and associated landscape features and processes where siting renewable energy development would have the least conflicts with biological resources

The reserve design envelope developed through the reserve design process described here would not be implemented under any DRECP alternative. Instead, the reserve design envelope was used to create a DRECP Plan-Wide Reserve Design Envelope for each action alternative (Preferred Alternative and Alternatives 1–4), including the BLM LUPA conservation designations and Conservation Planning Areas for each alternative as described in Volume II. Additionally, the reserve design process informed the development of the Interagency Plan-Wide Conservation Priority Areas for each alternative, which are the basis for the NCCP Conceptual Plan-Wide Reserve Design of each alternative. Finally, the reserve design envelope described here was used in the identification of DFAs for each alternative, as described in Section I.3.6.

I.3.4.4.2 Goals and Principles for the Reserve Design

As described in Section I.3.4.3, the DRECP biological goals provide the overall conservation vision for the reserve design, and the DRECP biological objectives describe the desired conditions of the reserve design. The BGOs developed for landscape features

and processes, natural communities, and Covered Species are provided in Appendix C. These Plan-wide BGOs guided development of the DRECP reserve design envelope.

Additionally, the following conservation planning principles guided the reserve design development process:

- Maximize conservation area size
- Maintain connectivity
- Minimize edge
- Target high-quality, representative examples of all natural communities
- Target areas with limited access
- Buffer urban and rural use impacts
- Preserve irreplaceable and threatened biological resources
- Fully represent environmental gradients
- Consider ecoregions and watersheds
- Consider full ecological diversity within communities
- Contribute to the long-term conservation of all Covered Species
- Consider management needs

Additional information regarding reserve design principles is provided in Appendix D, Section D.2.2.

I.3.4.4.3 Reserve Design Methods

The reserve design envelope was developed over several years using a phased planning process, as recommended by the DRECP ISA (2010), and was guided by the DRECP BGOs and principles of conservation planning (Section I.3.4.4.2). The reserve design envelope was developed from a systematic and objective approach (Margules and Pressey 2000; Carroll et al. 2003; Moilanen et al. 2009) using several independent methods and that were iteratively evaluated and refined. An overview of the reserve design planning process is provided below and in Exhibit I.3-2.

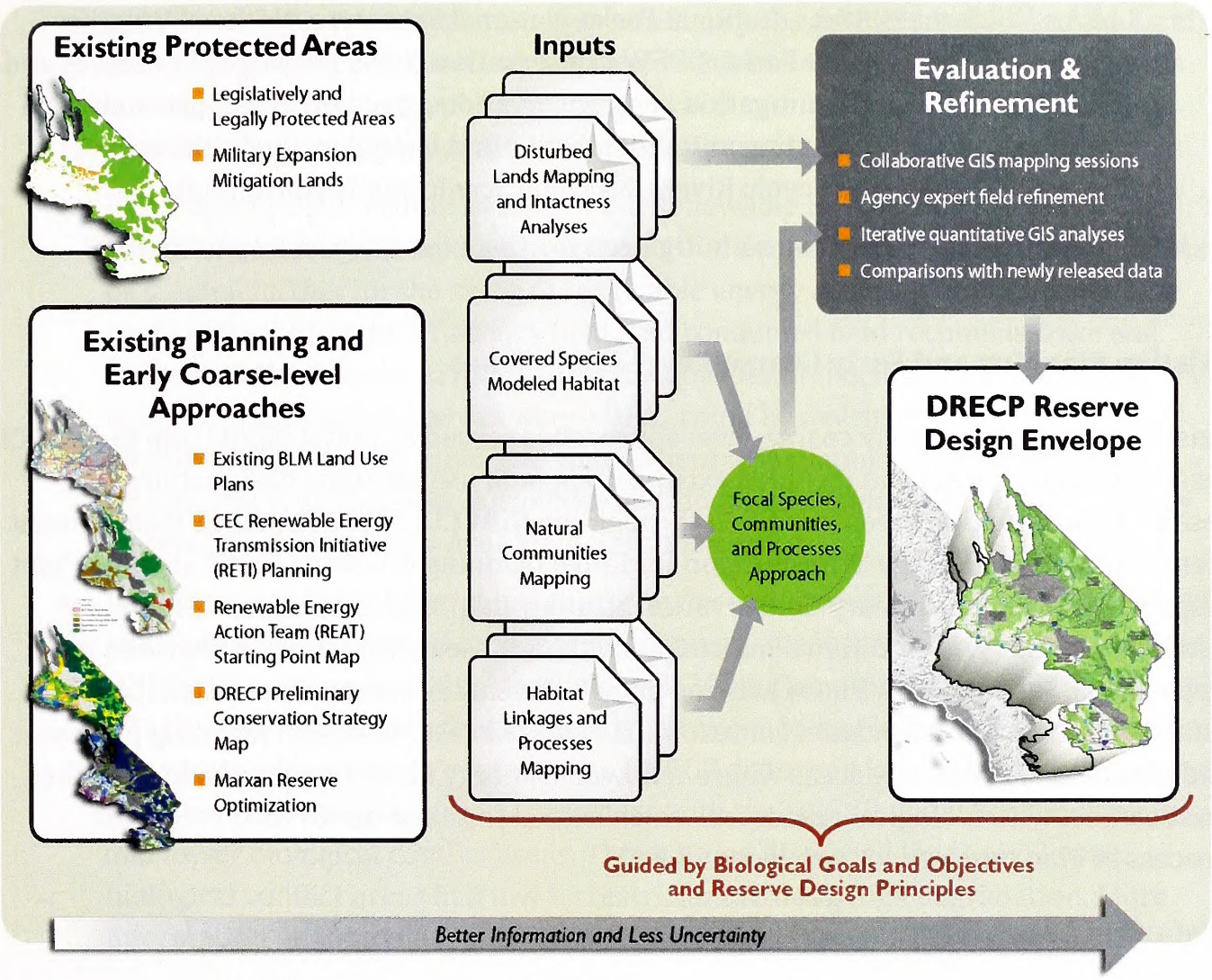


Exhibit I.3-2 DRECP Reserve Design Process

Identifying the Reserve Design Planning Area and Existing Protected Areas

The initial step in the reserve design process was to identify the reserve design planning area and existing protected areas. The reserve design planning area includes the entire Plan Area outside of Other Lands (see Glossary of Terms). Other Lands not considered part of the reserve design planning area include military lands, BLM Open Off-highway Vehicle (OHV) areas, BLM Imperial Sand Dunes Recreation Area Management Plan Open OHV area, Johnson Valley OHV Shared Use area, and tribal lands. Although Other Lands may contain biological resources important to the reserve design, these lands were not part of the reserve design process.

Additionally, reserve design was not conducted within existing protected areas. Existing protected areas serve as building blocks for the reserve design envelope; however, the boundaries are these lands were considered fixed for reserve design planning. Existing protected areas include LLPAs and MEMLs, as described below. More information on existing protected areas is provided in Appendix D, Section D.3.3.

- LLPAs: Wilderness Areas, National Parks, National Preserves, National Wildlife Refuges, California State Parks, CDFW Conservation Areas (Ecological Reserves and Wildlife Areas), CDFW mitigation and conservation easement areas, privately held conservation areas including mitigation banks and land trust lands, Wilderness Study Areas, Wild and Scenic Rivers, National Scenic and Historic Trails
- MEMLs: Lands conserved as mitigation for the expansion of Department of Defense installations

Existing Planning and Early Coarse-Level Approaches

Existing planning and early coarse-level approaches served as initial inputs into the DRECP reserve design process and included existing BLM land use planning designations (i.e., resource conservation areas identified through the BLM CDCA and Resource Management Plans), Renewable Energy Transmission Initiative planning products, REAT Starting Point Maps, the DRECP Preliminary Conservation Strategy map, and the Marxan reserve optimization analysis. Additional information about these initial inputs is provided in Appendix D, Section D.3.4. These existing plans and coarse-level approaches helped establish the early conservation context for the phased reserve design planning process and also helped to identify areas where renewable energy development would have the least conflict with biological resources, which helped to shape the DFAs through the process of Plan integration (see Section I.3.6).

Disturbed Lands Mapping and Intactness Analyses

Disturbed lands mapping and intactness analyses, from multiple sources, were used to further identify degraded and less ecologically intact areas considered less important for the reserve design. These mapping products and analyses were inputs into the evaluation and refinement phase leading to the reserve design envelope. These mapping products and analyses included:

- DRECP disturbed lands mapping: The DRECP land cover map has evolved over time as new and better data became available, and a more refined hierarchical classification system was developed (for more information see the DRECP *Baseline Biology Report* [Appendix Q]). The initial DRECP land cover map used during early phases of the reserve design process identified disturbed lands as including cultivated croplands, quarries, mines, gravel pits, oil wells, other disturbed lands, and rural lands with high road densities. The initial data sources for mapping disturbed lands included the California Gap Vegetation data layer (Lennartz et al. 2008), the California Farmland Mapping and Monitoring Program data (California Department of Conservation 2009), and a rural lands model based on road density (Dudek and ICF 2011b). Where new mapping data were subsequently available

(CDFG 2012; Aerial Information Systems 2013), the DRECP land cover map (and mapping of disturbed lands) was updated with the new information, which was subsequently used in the focal species, natural communities, and processes approach and during the evaluation and refinement process.

- REAT agency field reconnaissance of the Renewable Energy Study Areas (RESAs): The DRECP *Preliminary Conservation Strategy* (Dudek and ICF 2011b) identified RESAs to be studied further for the siting of renewable energy development. As part of the study of the RESAs, REAT agency field staff conducted field reconnaissance and imagery interpretation to refine the RESAs by identifying disturbed areas and other lower biological conflict areas where DFAs could be developed. This step also identified areas of high biological value where DFAs should not be developed. Attachment A of Appendix D provides additional information on the REAT agency Renewable Energy Study Area Field Reconnaissance.
- Intactness analyses: Several intactness analyses were used in the planning process, and each were developed for separate planning purposes not associated with the DRECP (Randall et al. 2010; Marshall et al. 2000; Cameron et al. 2012; Stoms et al. 2011). They provided independent, objective sources of information on terrestrial intactness with which to compare the DRECP disturbed lands mapping. In general, the intactness analyses are in agreement with the DRECP disturbed lands mapping and lower biological conflict areas. The mapped disturbed lands and lower biological conflict areas had low terrestrial intactness/high degradation. More information on intactness analyses is provided in Appendix D, Section D.3.5.

Focal Species, Natural Communities, and Processes Approach

As documented in the DRECP *Baseline Biology Report* (Appendix Q) and Chapter III.7, vast improvements to key biological databases have been made over the course of the DRECP planning process. The focal species, natural communities, and processes approach leveraged these new data sources and improvements to create an initial reserve design envelope using better information with less uncertainty. Key biological database improvements were made for Covered Species modeled habitat data (see Appendix C of the *Baseline Biology Report* in Appendix Q), natural community mapping (see Volume III, Section III.7.4.1, Flora, Natural Communities, and Other Land Covers), and habitat linkage and processes mapping (e.g., see Volume III, Section III.7.8, Landscape Habitat Linkages and Wildlife Movement Corridors). These data improvements facilitated and served as inputs to a focal species, natural communities, and processes approach, which created an initial reserve design envelope from "driver" resources. Additional details on this approach are provided in Appendix D, Section D.3.6.

This approach involved creating a composite map of important areas for key Covered Species, natural communities, and processes (i.e., the reserve drivers). The reserve drivers used in this approach included desert tortoise; Mohave ground squirrel; bighorn sheep; microphyll woodland; dunes and sand resources; flat-tailed horned lizard; hydrologic features; and West Mojave corridors, rare natural communities, and environmental gradients. Reserve drivers were selected because these resources are important to the overall DRECP conservation strategy and generally occur across a range of subareas and habitats of the Plan Area, such that conserving the areas important for the reserve drivers would also conserve the areas important for the other Covered Species and natural communities. Important areas for desert tortoise, Mohave ground squirrel, and bighorn sheep were based on REAT agency interpretations of the species distribution models and recent occurrence data for these species, which correspond to the BGOs for these species.

Evaluation and Refinement

The initial results from the disturbed lands mapping and intactness analyses and the focal species, natural communities, and processes approach were evaluated and refined, in the context of existing planning and early coarse-level approaches, through:

- Collaborative GIS mapping sessions: Reserve design delineation and decisions made in developing the reserve design envelope were done through Web-based meetings facilitated by interactive GIS mapping sessions. Agency field experts and technical staff, including staff from the USFWS, BLM, CEC, CDFW, and Dudek, gathered to identify and map the draft reserve design envelope. Exhaustive interactive GIS comparisons of early planning data; coarse-level approaches; disturbed lands mapping; intactness; the focal species, natural communities, and processes approach; habitat models for all Covered Species, mapping for all natural communities, other habitat linkage data, environmental gradients, and other geospatial data layers were evaluated in collaborative mapping sessions to develop the reserve design envelope. Additional information on these sessions is provided in Appendix D, Section D.3.7.1.
- Agency expert field refinement: Additional refinement of the reserve design envelope resulted from input gathered by USFWS staff as they reviewed and conducted ground truthing in desert tortoise linkage habitat in the Ord–Rodman Linkages in the Stoddard Valley and Johnson Valley areas. This field reconnaissance and evaluation is provided in Attachment B of Appendix D.
- Iterative quantitative GIS analyses: GIS analyses were conducted periodically throughout the evaluation and refinement process to quantitatively track and assess the capture of the species, natural communities, and landscape elements/processes. Early mapping approaches, interim maps, and draft versions of the reserve design

envelope developed at various stages of the reserve design process were quantitatively assessed to determine the conservation levels of modeled species habitat for all Covered Species, mapping of all natural communities, and data for habitat linkages, environmental gradients, and ecological processes. These quantitative analyses were stratified to assess representation of conserved resources by ecoregion subarea, county, and ownership class. These quantitative GIS evaluations provided a systematic way of comparing and evaluating various reserve design configurations and reserve design delineation decisions.

- Comparisons with newly released data and models: Comparisons of the reserve design envelope to recent conservation analyses were conducted, including additional intactness analyses developed by the Conservation Biology Institute as provided in Appendix D, Section D.3.7.4.

I.3.4.4.4 Reserve Design Envelope Summary

The reserve design envelope was developed from the methods described above and is shown in Figure I.3-1. The reserve design envelope covers approximately 8,365,000 acres, which is 44% of the approximately 19,013,000-acre reserve planning area. The reserve design envelope plus the existing protected areas (i.e., LLPAs and MEMLs) together encompass 84% of the reserve planning area (approximately 16,027,000 acres).

The reserve design envelope and existing protected areas combined cover at least 80% of the reserve design planning area in 7 of the 10 ecoregion subareas. This reflects the importance of these ecoregion subareas in the reserve design envelope because these ecoregion subareas are located in the most remote portions of the Plan Area, contain the most intact landscapes, and support important areas for Covered Species and natural communities. In the Imperial Borrego Valley, Pinto Lucerne Valley and Eastern Slopes, and West Mojave and Eastern Slopes ecoregion subareas, the reserve design envelope encompasses less area primarily due to more intensive land uses in these less-remote areas, resulting in less-intact landscapes and more degraded habitat not considered important for meeting the conservation needs of the Covered Species and natural communities.

I.3.4.4.5 DRECP Plan-Wide Reserve Design Envelope for Each Alternative

The reserve design envelope will not be implemented under any DRECP alternative. Instead, the reserve design envelope was used to guide the identification of the BLM LUPA conservation designations and Conservation Planning Areas, which together with the existing protected areas (i.e., LLPAs and MEMLs) comprise the DRECP Plan-Wide Reserve Design Envelope for each alternative (i.e., the Preferred Alternative and Alternatives 1 through 4).

Additionally, the DRECP Plan-Wide Reserve Design Envelope for each alternative includes an interagency Plan-wide Conservation Priority Area, which is the basis for the NCCP Conceptual Plan-Wide Reserve Design of each alternative. The NCCP Conceptual Plan-Wide Reserve Design reflects the highest priority areas for the creation and long-term management of habitat reserves for the conservation of the 37 proposed Covered Species and representative examples of the natural communities and processes that support them in the Plan Area (see Section I.3.2 for more information on the NCCP planning process). The Interagency Plan-Wide Conservation Priority Areas were designed to build off of the existing conservation areas and include BLM LUPA conservation designation lands where durability tools and/or management agreements would be prioritized and biological Conservation Priority Areas on non-BLM lands.

The following standards and criteria were used to develop the Interagency Plan-Wide Conservation Priority Areas (and Conceptual Plan-Wide NCCP Reserve Design):

- Conserve representative landscapes and natural communities to maintain the ecological integrity of large habitat blocks, ecosystem function, and biological diversity.
    - LLPAs and MEMLs were considered existing conservation areas that are and would continue to be protected and managed for natural resources, including Covered Species and the natural communities and processes that support them. The LLPAs and MEMLs formed building blocks of the Interagency Plan-Wide Conservation Priority Areas.
    - Ecoregion subareas were used to subdivide the Plan Area into ecological units to ensure the capture of representative landscapes across the Plan Area.
- Conserve key habitat areas that also provide habitat linkages for the movement and interchange of organisms within the Plan Area and to areas outside the Plan Area.
    - Key habitat linkage areas were included in the Interagency Plan-Wide Conservation Priority Areas using species-specific linkage information for key Covered Species, including desert tortoise, Mohave ground squirrel, and desert bighorn sheep.
    - Landscape-scale, multispecies habitat linkage information was used to identify movement corridors between habitat blocks inside and outside the Plan Area.
    - Species-specific threats and stressor information was incorporated to identify the critical linkage areas.

- Maintain habitat areas large enough and of appropriate quality to support sustainable populations and contribute to the recovery of declining or vulnerable Covered Species.
    - Resource-specific conservation strategies were developed for logical groupings of Covered Species
        - Species-specific conservation strategies
        - Riparian and wetland conservation strategy
        - Dune conservation strategy
        - Plant Covered Species
        - Wide-ranging Covered Species conservation strategy
        - Agricultural species conservation strategy
    - Species-specific conservation factors were considered for each of the 37 Covered Species to identify the Interagency Plan-Wide Conservation Priority Areas, including:
        - Species' population trends
        - Species' stressors and threats
        - Species' distribution and density
        - Terrestrial habitat intactness
        - Climate refugia
- Include conservation of environmental gradients and areas of high habitat diversity.

The DRECP Plan-Wide Reserve Design Envelope described in Volume II for the Preferred Alternative and Alternatives 1–4 were developed through the integrated planning process described in this chapter and the Plan integration described in Section I.3.6. A Plan-wide and subarea analysis of the landscape, natural community, and Covered Species conservation provided by the reserve design for each alternative is provided in Volume IV, Environmental Consequences/Effects Analysis.

I.3.4.5 Develop Conservation and Management Actions

The CMAs are part of the conservation strategy associated with each alternative and are important elements of the Step-Down Biological Objectives that contribute to achieving the Plan-wide BGOs. The CMAs describe the avoidance and minimization measures for pre-construction, construction, operations, and decommissioning of Covered Activities. The CMAs also describe the compensation requirements for Covered Activities that would contribute to conservation and management within the reserve. The biological CMAs are

described in Volume II, Section II.3.1.2.5. Within BLM LUPA conservation designations (i.e., NLCS, ACEC, or Wildlife Allocation), the BLM worksheets (see Appendix L) for each land management unit (i.e., each named NLCS, ACEC, or Wildlife Allocation area) describe the unit-specific management actions that serve as CMAs for those portions of the BLM-administered lands in the Plan Area.

I.3.4.6 Develop Monitoring and Adaptive Management Program

The purpose of the MAMP is to monitor the implementation of conservation actions and to adaptively manage the species, natural communities, and ecological processes to ensure Plan implementation is effective and consistent with the BGOs and to ensure compliance with the requirements of the DRECP. The MAMP establishes scientific monitoring and management principles and a strong institutional structure with the authority to implement and enforce the conservation actions. The MAMP also provides the plan implementation context to support a feedback system that incorporates the results of previous studies into future management and monitoring actions. The MAMP encompasses monitoring for compliance with permit conditions (i.e., compliance monitoring), effectiveness monitoring including monitoring to determine achievement of BGOs, project-level monitoring, land use plan monitoring, and monitoring for validation of management actions. The MAMP is described in detail in Section II.3.1.3 of this document.

I.3.5 Renewable Energy Goals and Planning Process

I.3.5.1 Federal/BLM Renewable Energy Goals

As detailed in the discussion of the interagency and BLM purpose and need (Sections I.1.1 and I.1.2), a number of executive and secretarial orders and congressional mandates are designed to promote the development of domestic renewable energy resources. The BLM, as the largest federal land management agency in the desert, is charged with the development of renewable energy that is consistent with the BLM's multiple use and sustained yield mandate, as well as FLPMA's requirement to "preserve the unique and irreplaceable resources, including archaeological values, and conserve the use of the economic resources" of the CDCA (43 United States Code [U.S.C.] 1781[a][6]). The BLM is seeking to facilitate renewable energy development under Secretarial Order 3285A1 (Department of the Interior 2010) and meet the president's Climate Action Plan goals to facilitate additional renewable energy projects on the public lands to support 6 million homes by 2020; and at the same time, the BLM must strive to facilitate renewable energy that is consistent with protection of other important resources and values, including units of the National Park System, National Wildlife Refuges, other specially designated areas, and wildlife, cultural, historic, and paleontological values.

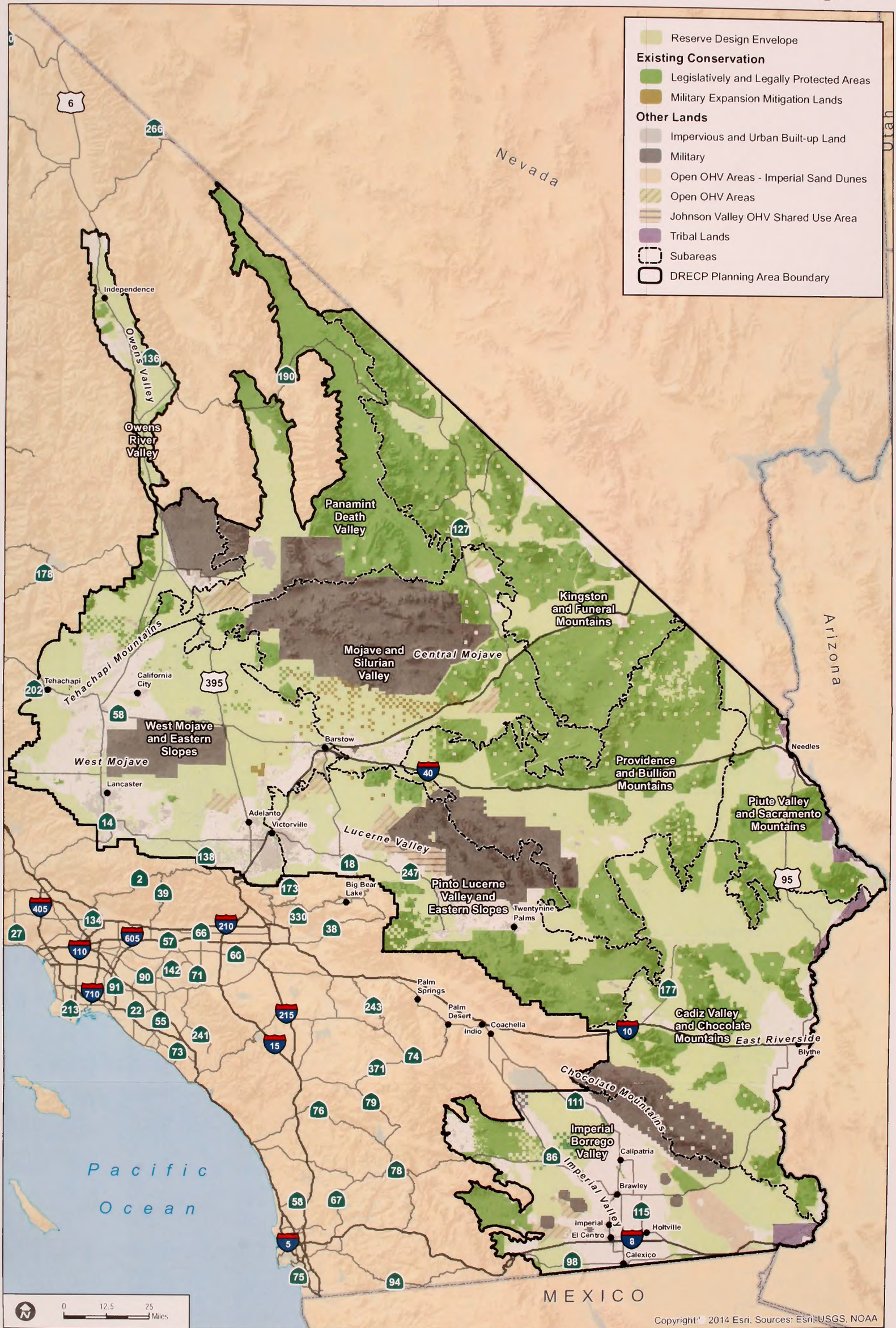


FIGURE I.3-1
Reserve Design Envelope

INTENTIONALLY LEFT BLANK

I.3.5.2 California's Renewable Energy Requirements and Energy Goals

The DRECP is an important part of California's strategy for significantly increasing the use of renewable energy and reducing the burning of fossil fuels. The state's drive to develop more renewable energy resources rests on two mandates. The first is a statutory requirement that at least 33% of retail electricity sales in California must come from renewable resources by December 31, 2020 (California Public Utilities Code, Sections 399.15[b][2][B] and 399.30[c][2]; California Public Resources Code, Section 25740). This standard, known as the Renewables Portfolio Standard (RPS), is one of the most ambitious renewable energy requirements in the country. The Global Warming Solutions Act of 2006 (AB 32) is the other mandate propelling the state's renewable energy effort to reduce greenhouse gases (GHG) emissions to address the threats posed by climate change, discussed in Section I.3.5.2.2. A number of regulatory programs are being established to achieve the statutorily mandated GHG reduction to 1990 levels by the year 2020. In addition, executive orders by the governor have established a long-range goal of reducing the 1990 level of GHG emissions by 80% by 2050 (California Executive Order S-3-05). To achieve the 2050 GHG reduction goal, California will need to develop new zero- or low-carbon energy sources such as renewable electricity generating plants above and beyond those required to meet the current RPS mandate and 2020 GHG reduction goals.

I.3.5.2.1 Renewables Portfolio Standard

California's RPS prescribes that a percentage of each utility's retail electricity sales must come from eligible renewable energy resources. The RPS was first introduced in 2002 as a requirement that 20% of the state's electricity come from renewable resources by 2017 (SB 1078, Section 3). The state's initial objectives in adopting the RPS included diversification of the state's electricity generation resources, reduction of California's dependence on fossil fuels, improved air quality and public health, and stimulation of new jobs and economic growth (SB 1078, Section 3). Four years later, legislation was enacted to accelerate the RPS requirement and, among other things, to acknowledge that new and modified transmission facilities were needed to accommodate the growth in renewable energy resources (SB 1078, Section 13).

The current RPS mandate—which requires electric utilities to procure energy equal to at least 33% of their retail sales from eligible renewable resources by the end of 2020—was originally introduced in the same 2008 executive order that launched work on the DRECP (California Executive Order No. S-14-08). In this executive order, Governor Arnold Schwarzenegger explicitly linked California's drive to develop renewable energy resources to a more recent commitment to reduce GHG emissions (California Executive Order No. S-14-08). As part of the push to expand renewable energy resources, the governor also directed the CEC and CDFW to work with other state and federal agencies to expedite the

development of RPS-eligible resources and to develop the DRECP as a way to "facilitate the RPS desert project approval process" (California Executive Order No. S-14-08).

Governor Edmund G. Brown Jr. continued support for both the expanded RPS and work on the DRECP. In 2011, the Legislature passed and Governor Brown signed a statutory RPS requirement that compels investor-owned utilities, publicly owned utilities, and other retail sellers of electricity to procure energy equal to 33% of their retail sales from renewable sources by 2020, and to also meet interim targets of 20% renewable generation by the end of 2013 and 25% by the end of 2016 (California Public Resources Code, Section 25740, and California Public Utilities Code, Sections 399.15[b][2][B] and 399.30[c][2]). In 2013, Governor Brown and the Legislature took the additional step of authorizing the California Public Utilities Commission (CPUC) to require retail sellers of electricity to procure more qualified renewable generation than the minimum amount required under the RPS (AB 327). Governor Brown and U.S. Department of Interior Secretary Ken Salazar signed a memorandum of agreement in 2012 committing to continue cooperative state and federal efforts on renewable energy, including completion of the DRECP and the coordinated licensing of renewable energy projects, in order to accomplish state and federal objectives, including the RPS and GHG emissions reductions (Department of the Interior and the State of California 2012). That agreement noted that a "substantial increase" in development of qualified RPS projects was needed to meet the 33% target, and described expansion of renewable energy generation as "a key priority for California's economic and environmental future."

I.3.5.2.2 Greenhouse Gas Emissions Reductions

Climate change emerged as a major policy concern of California's lawmakers and governor since 2000. The state's natural gas-fired generating plants and shares of out-of-state coal plants owned by or under contract to California utilities are major contributors to GHG emissions from the state's electricity sector, while renewable generation is essentially free of GHG emissions. As a consequence, the state's move to expand the RPS requirement to 33% was seen as a way not only to achieve the original goals of the RPS program, but also to help the state meet its GHG targets.

California's landmark climate change legislation, AB 32, was enacted in 2006 to require that California's statewide GHG emissions be rolled back to their 1990 levels by 2020. This mandate in AB 32 will require a reduction of nearly 30% in the state's GHG emissions compared to the level of emissions that would be expected in 2020 in the absence of the legislation, according to the Climate Change Scoping Plan (Scoping Plan) that the California Air Resources Board (CARB) adopted in 2008. The state's plan for rolling back GHG emissions in this and future decades relies on a number of initiatives that include significant cutbacks in GHG emissions from the generation of electricity. The electricity

sector accounted for 23% of the state's overall GHG emissions in 2002–2004, according to the 2008 Scoping Plan (CARB 2008, p. 13, Table 1) and 19% in 2011 according to the draft of the first update to the Scoping Plan (CARB 2013, p. 21). The 2008 Scoping Plan relies on two major initiatives for the planned reduction in GHG emissions from the electricity sector: (1) improvements in the energy efficiency of utilities, businesses, and residents, which are expected to save the equivalent of an estimated 26.3 million metric tons of carbon dioxide equivalent (MMT CO_2E) a year by 2020; and (2) greater reliance on renewable energy in place of electricity generated from fossil fuel plants, which is expected to save 21.3 MMT CO_2E by 2020 (CARB 2008, p. 17, Table 2).

Beyond the 2020 GHG reduction mandate in AB 32, the state's governors have established higher long-term GHG emission goals for the state. In 2005, Governor Schwarzenegger set GHG reduction targets that included the 2020 goal that appeared in AB 32, as well as a goal to reduce emissions 80% below the 1990 levels by the year 2050 (California Executive Order S-3-05). Governor Brown reaffirmed the 2050 GHG goals of his predecessor, and, in 2012, signed Executive Order B-16-12 to specifically apply the 80% GHG reduction target for 2050 to the transportation sector as an added impetus to the deployment of zero-emission vehicles (California Executive Order B-16-12). Since many of the planned zero-emission vehicles are expected to be electric vehicles, these transportation-specific goals will translate into higher demand for electricity to charge the state's growing number of electric vehicles. This demand will need to be met in large part through added renewable and other zero-carbon electricity resources if the state is to meet its RPS and GHG targets.

While CARB's Scoping Plan does not specifically include measures calculated to achieve the 2050 GHG emission reduction goal, the plan notes that the climate change programs implemented to meet the 2020 reduction goal also put the state on the path to meet the more ambitious long-term reductions. The long-range targets will require additional programs and technologies that cannot be defined in detail at this time, according to the Scoping Plan (CARB 2008, p. 117):

> The 2020 goal was established to be an aggressive, but achievable, mid-term target, and the 2050 greenhouse gas emissions reduction goal represents the level scientists believe is necessary to reach levels that will stabilize [the] climate [CARB 2008, p. 4] ... Reducing our greenhouse gas emissions by 80% will require California to develop new technologies that dramatically reduce dependence on fossil fuels, and shift into a landscape of new ideas, clean energy, and green technology. The measures and approaches in this plan are designed to accelerate this necessary transition, promote the rapid development of a cleaner, low carbon economy, create vibrant livable communities, and improve the ways we travel and move goods throughout the state. This transition will require close coordination of California's

> climate change and energy policies, and represents a concerted and deliberate shift away from fossil fuels toward a more secure and sustainable future [CARB 2008, p. ES-2].

In its own assessment of the need for expansion of renewable energy resources, the California Energy Commission found that "(p)reliminary estimates of renewable energy needed to achieve the 2050 GHG emission reduction goal suggest that California's renewable electricity percentage may need to increase to more than 70% [of total generation], depending on the pace and policies affecting electrification of the transportation sector, retiring coal generation, and whether existing nuclear plants are relicensed" (CEC 2011a).

CARB adopted the "First Update to the Climate Change Scoping Plan" in May 2014 (http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf). The update continues to support the Scoping Plan and California's efforts to build a clean, affordable, and reliable energy system. In addition, it identified the need to develop a "comprehensive greenhouse gas reduction program for the State's electric and energy utilities by 2016."

I.3.5.3 Overview of the Renewable Energy Planning Process and Development Focus Area Design Process

To support the respective state and federal renewable energy goals, the DRECP identifies desert locations that are most compatible with renewable energy development and areas where the DRECP's mitigation and conservation efforts will be focused. The configuration of DFAs (areas to which renewable energy development will be directed under the DRECP) was a collaborative process that considered and integrated state and federal renewable energy goals, natural resources conservation needs, culturally important areas, recreation, and visual resources in the Plan Area, and information from renewable energy, conservation, utility, military, tribes, recreationists, and affected local stakeholders.

The following sections describe some of the underlying principles, processes, and projections used to estimate the potential need for renewable energy in the California desert and to identify DFAs and other energy development components of the different Plan alternatives. The processes used in developing the biological conservation elements of the DRECP are described separately in Section I.3.4.

I.3.5.3.1 Guiding Principles

The REAT agencies and stakeholders identified the following principles to guide the identification of areas compatible with renewable development:

1. Generation should be developed either on already-disturbed land or in areas of lower biological value, and conflict with both biological and non-biological resources should be minimized.
2. Areas identified for generation should have high-quality solar, wind, and/or geothermal renewable energy resources.
3. Generation should be sited close to existing transmission and in areas where transmission could be expected as a reasonable extension of the existing transmission system and planned system upgrades, as identified by the Renewable Energy Transmission Initiative , or other transmission plans.
4. Generation should, to the maximum extent possible, be aggregated to avoid transmission sprawl, reduce cost, and reduce disturbance across the Plan Area. Again, this principle aims to minimize disturbance to biologically, culturally, recreation, and visual valuable areas.
5. The Plan should provide sufficient areas for development flexibility to ensure the Plan does not constrain competition within the market or unnecessarily result in distorted or environmentally incompatible incentives when implemented (i.e., where feasible, the Plan should remain market neutral between different technologies or different project configurations).

I.3.5.3.2 Steps in the Planning Process

To plan for future energy development consistent with federal and state policies and mandates, the following steps to identifying the best locations for renewable energy were identified:

1. Identify the need for desert renewable energy generation: Estimate the desert-located renewable generation needed to meet California's renewable energy goals and the federal goals. This estimate, which is subject to a number of variables and uncertainties, is based on policies and programs affecting the supply of electricity and climate change, projected mix of renewable and other zero- and low-carbon technologies, economic forecasts, and many other factors. Taking these variables into consideration, the CEC developed a number of plausible scenarios to ascertain the potential need for renewable energy in the desert region in the coming decades. Scenarios and input variables were honed over the course of more than a year based on public comments received from stakeholders. As explained in Section I.3.5.4., the

scenario planning effort ultimately focused on the potential need for renewable energy through 2040. The potential need identified in the scenarios was then adjusted to account for the uncertainty of long-range planning estimates, the desire to ensure flexibility and competitiveness in the renewable energy development industry, and the possibility that limited transmission capacity could constrain renewable energy development in one or more of the DFAs. The scenario planning exercise made use of the renewable energy calculator, a spreadsheet-based planning tool developed by the CEC that is described in Section I.3.5.4.3.

2. Estimate the acreage that may be needed: Estimate the acreage that may be needed to achieve the renewable energy goals identified above, accounting for differences in technology and local constraints on development, including land ownership issues and site-specific constraints to development such as too-steep slope and environmental resource constraints (e.g., natural or cultural resources that need to be avoided). This step is described in Section I.3.5.5.
3. Identify suitable locations for DFAs and allocate megawatts among them: Use resource distribution data, in combination with agency and stakeholder input, to identify and characterize areas suitable for renewable energy development based on the principles laid out above and accounting for the conservation goals identified during the reserve design process. Once DFA locations are identified, estimate renewable energy profiles that allocate generation capacity (megawatts) to each technology and between DFAs for the purpose of transmission planning, resource impacts analysis, and mitigation development. The method for this is described in Appendix F1.
4. Develop a conceptual transmission plan: Develop a conceptual transmission plan to accommodate the new renewable energy generation planned for each DFA, with assistance from transmission planners from the municipal and investor-owned utilities that will purchase renewable power generated in the Plan Area, U.S. Department of Defense, CPUC, and California Independent System Operator. This plan is described in Appendix K.

I.3.5.3.3 Planning Projections

CEC staff derived the following planning assumptions that were used to guide development of the DRECP, to help identify and map the DFAs, and to guide development of the DRECP alternatives.

1. Plan for 20,000 megawatts (MW) of new renewable energy resources in the Plan Area by 2040. Over the course of more than a year, the CEC worked to develop a set of economic, energy, and environmental projections that would allow a reasonable estimate of the amount of renewable electricity that will be generated within the

DRECP to meet renewable energy and GHG emissions targets. The revised July 2012 calculator-produced scenario projects that between 17,163 and 19,419 MW of renewable electricity generating capacity may be needed by 2040 from the Plan Area (Appendix F3). To account for the many uncertainties in this projection, allow for flexibility, and ensure the DRECP can accommodate the level of renewable energy development that may be needed in the region, the REAT agencies decided to allow for a margin of error and plan for the development of up to 20,000 MW of new renewable electricity generation and associated transmission capacity. This process is described in more detail in Sections I.3.5.4.4 and I.3.5.4.5.

2. Estimates of technical and economic potential largely determine which technologies are most likely to be employed to achieve 20,000 MW of new renewable energy. For example, the capacity expected from geothermal resources within the Plan Area is approximately 2,800 MW under all alternatives because this was judged to be a reasonable projection of geothermal resources in the area given the availability of suitable sites, existing technologies, and development costs, as well as the anticipated evolution of these factors through 2040.
3. The 20,000 MW of new renewable generation capacity were distributed to DFAs based on the availability of generation resources in each DFA relative to the overall availability of resources across the Plan Area. Consequently, for each subset of DFAs that ultimately became alternatives, a different combination of wind, solar, and geothermal resources were estimated, which would result in different construction and operational impacts.

I.3.5.3.4 Planning Time Frame

From the outset, the DRECP has been envisioned as a long-term, programmatic planning document that will guide renewable energy development and conservation efforts in the region for decades to come. As explained in Section I.3.5.2, the state's long-term targets for renewable energy development are driven in part by the goal of reducing GHG emissions by 2050 to a level 80% lower than GHG emissions in 1990. For this reason, the REAT agencies initially focused on a plan that would accommodate the anticipated need for renewable energy through 2050 (CEC 2011b). However, as explained below, planners later settled on 2040 as a more appropriate planning period.

Early CEC staff calculations to determine the state's likely renewable energy needs showed the need for renewable energy development in California would nearly double between 2040 and 2050 (CEC 2011c). This was largely due to added demand growth that would have to be met entirely from zero- or low-carbon resources to keep the state on track to meeting its 2050 GHG reduction goal. This anticipated jump in electricity demand and the heavy reliance on new zero- or low-carbon electricity resources to meet it between 2040

and 2050 are largely the result of the need for additional reductions in GHG emissions during that decade and a dramatic acceleration in the expected electrification of the transportation sector (from 18 million to 40 million electric vehicles) (CEC 2011c). In addition, the growth demand for zero-carbon energy between 2040 and 2050 will be fueled by continued electrification of other economic sectors (e.g., the industrial sector) as they attempt to reduce GHG emissions as well.

As noted in Section I.3.5.2 and as described in the Scoping Plan, additional renewable and other zero- or low-carbon generating technologies are expected to evolve in coming decades in ways that might fundamentally change the available options and strategies for meeting renewable energy and GHG reduction targets over time. Off-shore wind and tidal generation, for example, are immature renewable technologies that will require significant technological development, but might ultimately reduce future need for desert-based solar and wind generation (CEC 2013a). For these reasons, and because the use of a 2050 planning horizon for the DRECP would have required planning for dramatically more renewable energy capacity notwithstanding the uncertainties that come with planning for electricity system capacity 30 years in the future, the agencies agreed that 2040 was a more prudent and realistic time period for the DRECP planning effort. The 2040 planning window was judged to be long enough to put California on a trajectory to meet its 2050 GHG emissions reduction goals, while providing an opportunity to make adjustments closer to 2040 for new technologies and trends that emerge. The accelerated development of zero- or low-carbon generation that may be needed after 2040 can better be planned in the future when more is known about those evolving technologies and conditions.

I.3.5.3.5 Role of Zero-Carbon, Nonrenewable Energy

As described above, the federal and state governments have established mandates and policy goals for development of new renewable energy resources, and those mandates and goals are one of the primary reasons for the DRECP planning effort. But planning estimates of the amount of renewable energy capacity that will be needed in the desert, especially the longer-range projections, are also based on California's goals for GHG emission reductions by 2050, which will require that more of the state's electricity generation come from sources with no or very low carbon emissions and also require more of that zero- or low-carbon electricity to power a rapidly expanding fleet of electric vehicles, which is estimated at 40 million in California by 2050 (EEEI 2009, p. 4).

GHG goals could in theory be met through development of non-renewable energy resources with zero- or low-carbon emissions instead of the solar, wind, and geothermal facilities that are the focus of the DRECP. The primary non-renewable technologies with no or little carbon emissions include nuclear power plants and fossil fuel generation combined with carbon capture, utilization, and sequestration (CCUS). The CEC considered the extent to

which these technologies could serve as a viable substitute for renewable energy resources in meeting the state's long-range GHG emissions goals, and concluded they are not likely to play a significant new role during the 2040 planning period.

When developing the energy need projections for the DRECP, CEC staff judged that new nuclear power plants were unlikely to be built during the planning period to meet California's electricity demand because of a 1976 state moratorium on new nuclear plants and existing and anticipated public opposition to constructing new nuclear facilities. The planning scenarios developed for the DRECP also presumed that the state's two existing nuclear plants, San Onofre and Diablo Canyon, would cease operations when their current federal licenses expire in 2022 and 2024, respectively, increasing the need for renewable or other zero-carbon energy to replace the lost nuclear generation (CEC 2012, p. 9).[1] In addition, the final planning scenario anticipated that Arizona's Palo Verde Nuclear Generating Station, which provides about 6,000 gigawatt-hours (GWh) a year of zero-carbon electricity to California, would not provide electricity to the state in 2040, either because it will be shut down or California utilities will divest their interests in the plant (CEC 2012).

Coal-fired generation with CCUS is unlikely to be commercially viable by the 2030s because of the need for expensive new storage, pipeline, and transmission facilities and other technological, environmental, regulatory, and economic challenges. The technology remains unproven at a commercial scale. The only U.S. facility under development at the time the DRECP planning parameters were developed, the Kemper County Integrated Gasification Combined Cycle project in Mississippi, has a revised price tag of $4.7 billion ($8,075/kW), will only sequester 65% of the carbon emissions it produces from coal combustion, and has engendered substantial opposition from environmental groups (Sun-Herald 2013).

Natural gas generation with CCUS is viewed as more feasible in California than coal-fired CCUS and likely to occur on some scale. However, CCUS requires the right combination of reliable sequestration sites, technological advances, high carbon prices, and low fuel prices. Before large-scale natural gas CCUS could be developed in California, detailed assessments would need to demonstrate that geologic formations can safely hold large quantities of carbon dioxide for decades. Because of these uncertainties, it is not clear that CCUS will play a major role in meeting 2040 GHG emissions targets. Furthermore, even if natural gas generation with CCUS proves to be technologically and economically feasible in coming decades, the state may opt for renewable energy because of its environmental advantages over use of natural gas, including avoidance of methane gas discharges that occur during natural gas production and transportation.

[1] The operator of the San Onofre plant decided on June 7, 2013, to permanently close the facility

For these reasons, DRECP planners did not consider nuclear power and fossil fuel with CCUS to provide a likely alternative path to meeting GHG emission reduction targets during the DRECP term. Depending on future technological developments and energy costs, CCUS—especially natural gas generation with CCUS—may play a role in meeting GHG emissions reduction targets beyond 2040.

I.3.5.3.6 Gigawatt-Hours, Megawatts, and Acres

A gigawatt-hour is a unit of electricity that is generated or consumed over time, and therefore is the appropriate measure of California's total energy demand and its progress toward meeting its RPS benchmark. This would also seem to make gigawatt-hours the best measure of renewable energy that is likely to be needed from the Plan Area to keep the state on track to meet its RPS and GHG-reduction benchmarks. But the value of using gigawatt-hours is limited when planning for energy generation and transmission since gigawatt-hours does not provide a measure of the system's capacity—or, more precisely, the amount of electricity that might be generated and moved through transmission lines at any particular point in time. Capacity is usually expressed in terms of megawatts, which are the normal measure of both generating facility and transmission path size. Power plant developers, utilities, and regulatory agencies generally plan electricity generation and transmission by megawatt capacities.

At the same time, GCPs, NCCPs, and LUPAs are all, in a fundamental sense, land use and land management plans where conservation, development, and other uses are identified by lines on maps and by the acreage associated with various land use designations. For a plan like the DRECP, acres become a very important currency in renewable energy planning.

Moving between these three currencies of energy planning—gigawatt-hours, megawatts, and acres—is not an easy or precise calculation. Converting gigawatt-hours to megawatts, and megawatts to acres, depends on the generating technology that will be used. One megawatt of solar plant capacity will produce a different annual gigawatt-hours than a megawatts of wind, geothermal, or biomass generating capacity, and even different types of solar plants—thermal solar compared to photovoltaic technologies, for example—have different "capacity factors" that indicate how many gigawatt-hours they are likely to generate for a given megawatt capacity. In similar fashion, different renewable energy technologies have different acreage requirements for a given number of megawatts.

This means that in order to estimate the number of acres needed to accommodate the anticipated renewable energy generation, planners must make assumptions about the likely mix of wind, solar thermal, solar photovoltaic, and other technologies, as explained in Section I.3.5.5.1. However, the decisions that will determine the actual mix of technologies in California's renewables portfolio will largely fall to project developers, utilities, and the CPUC as they plan and build future projects.

I.3.5.4 Estimating the Quantity of Renewable Energy Generation Within the Plan Area

The amount of generating capacity (megawatts) that California will need to meet its RPS and GHG mandates and goals cannot be forecast with great precision. But the uncertainty inherent in these kinds of projections does not obviate the need for programmatic planning as the best way to conserve natural resources while accommodating renewable energy development. The development components of the DRECP are based on a reasonable estimate of the amount of renewable resources that will be needed in California's desert region over the next three decades. This section describes the variables that go into estimating the amount of new renewable resources that will need to be developed within the Plan Area by 2040.

I.3.5.4.1 Major Variables in Estimating the Amount of Renewable Energy Generation in the Plan Area

Projecting future electricity needs—both overall electricity demand and the need for renewable energy resources to meet state and federal policy goals—starts with estimates involving economic growth and demand. Some of the most important factors in projecting the future demand for electricity in California and the need for renewable energy are:

- Population and economic growth forecasts
- Anticipated savings due to improvements in energy efficiency technologies and their deployment
- Anticipated savings from cost-related energy conservation
- Increased use of electric vehicles and estimated per-vehicle consumption of electricity, which will represent a significant new demand for electricity if California is to achieve its GHG emission reduction goals
- Electrification of other economic sectors (e.g., the industrial sector) in order to reduce GHG emissions
- The extent to which electricity providers use GHG offsets instead of direct reductions in electricity-sector GHG emissions to meet the state's market-based cap-and-trade GHG limits
- The extent to which California's RPS compels the development of renewable resources in amounts greater than would be realized from the cap-and-trade GHG limits alone

The amount of renewable energy that will need to be developed in coming decades might also be affected by legislation or regulatory requirements that increase the existing RPS mandates, which could compel additional renewable development.[2] Future changes in the RPS requirement could also affect the extent to which renewable generation on the customer side of the meter (e.g., rooftop solar) contributes to meeting RPS requirements.[3]

Furthermore, estimates of the amount of renewable energy needed in California are based on the electricity sector contributing to GHG emission reductions in proportion to the sector's total emissions. It is possible, however, that the electricity sector could eventually be called upon to achieve more than its proportional share of emissions reductions if the industrial sector, or perhaps more likely the transportation sector, is unable to achieve proportional emissions reduction targets. This would have the effect of increasing the amount of zero- and low-carbon generation that is required.

Rooftop solar and other distributed generation installations have the advantage of providing generating capacity closer to where the electricity is actually used, and—in the case of rooftop and parking lot solar—can often be installed with few of the adverse environmental impacts that ground-mounted solar or wind facilities can cause. But as explained in Volume II, Section II.8.2.1, distributed generation alone cannot provide enough generating capacity to meet California's renewable energy needs.

Some renewable technologies have time-of-day and weather-related limitations. For example, solar power without any electricity storage capacity only contributes electricity during daylight hours. On a summer day, electricity consumption peaks in the afternoon with air conditioning use and is lowest (off-peak) in the night. Most forecasts that include large-scale transportation electrification anticipate a substantial increase in off-peak electricity use as cars are charged at homes during the night, and thus the need for greater off-peak generation, both renewable and otherwise, is anticipated over time. Wind and geothermal resources might be helpful in meeting this off-peak demand, but solar would not. Forecasters expect that challenges to integrating more renewables into the electricity system may be solved through advances in energy storage technologies, using time-of-use electricity rates to shift load and smooth the peaks and valleys of electricity demand, diversifying the types of resources in the state's generation mix, and other measures.

Finally, the challenges of estimating the future need for renewable electricity generation can be complicated by unanticipated events. For example, equipment problems at San Onofre Nuclear

---

2 As noted previously, California Assembly Bill 327 was enacted in 2013 to give the CPUC authority to require retail sellers of electricity to procure more qualified renewable generation than what is mandated by the RPS statute.

3 While increasing utility customers' self-generation using zero-carbon resources such as rooftop solar panels helps reduce GHG emissions, such generation does not currently contribute significantly to a utility meeting its RPS obligation.

Generating Station prompted the temporary closure of the plant in early 2012 and then the decision in June 2013 to permanently retire the plant. While the closure of the San Onofre Nuclear Generating Station does not affect the 2040 planning scenarios, which had anticipated the plant would close by 2040, it does increase the amount of renewable energy needed to meet the state's 2020 GHG emission reduction mandate since the plant provided 2,200 MW of zero-carbon generation.

I.3.5.4.2 Factors Affecting Future Renewable Energy Generation Goals Within the Plan Area

After estimating how much renewable energy capacity may be required in California, planners had to determine how much renewable energy might reasonably be developed within the Plan Area. The California desert is especially attractive to renewable energy developers because of factors that include high insolation (solar radiation) values for solar facilities, favorable wind characteristics, and large areas of undeveloped land capable of accommodating utility-scale projects. For these and other reasons, most large, utility-scale solar and wind projects that have been proposed and permitted in California to date are located in the Plan Area. Of the RPS contracts approved by the CPUC for in-state central-station renewable resources, a majority of the solar and wind megawatts are in the Plan Area (CPUC 2013).

Extrinsic factors may also act to reduce the generation goals for the Plan Area. These include:

- Proportion of projected statewide need that will be met by electricity imports from out-of-state renewable energy sources (e.g., wind projects developed in the Pacific Northwest)
- Amount of renewable energy that will be developed in California outside the DRECP, including from rooftop solar installations and other small distributed generation projects
- How much of the zero- and low-carbon energy needs might be met with non-renewable resources such as nuclear power and fossil fuel generation with CCUS

I.3.5.4.3 Estimating the Generation Goals for the DRECP

As discussed above, many different factors may affect the expected future generation goals for the Plan Area. To facilitate stakeholder involvement and ensure a transparent development process, CEC's electricity analysts developed a spreadsheet tool called the renewable energy acreage calculator.[4] The calculator was developed to estimate:

- Anticipated future renewable energy needs within the Plan Area based on statewide economic and demographic projections, projected energy efficiency and cost-related

[4] This has also been referred to as the renewable energy calculator.

conservation savings, the availability of non-renewable zero- and low-carbon energy, GHG targets, limits on procurement of out-of-state renewable resources, a mix of in-state geographical distribution of renewable technologies, and other inputs

- The minimum acreage footprint required to develop any given scenario, based on the acreage requirements of geothermal, wind, and solar technologies

The calculator was developed early during the DRECP planning process and presented to the Stakeholder Committee along with various planning scenarios and projections derived from a specific set of economic and energy assumptions.[5] Over the course of more than a year, CEC staff developed various planning scenarios to estimate renewable energy needs in 2040 and 2050, before DRECP planners eventually decided to focus on 2040.[6] These planning scenarios were shared with the Stakeholder Committee for review and comment, with subsequent versions refined in response to comments received and new information developed by CEC staff.

The purpose of this process was not to compute a precise number of megawatts or acres for DRECP renewable energy planning. Instead, use of the calculator assisted DRECP renewable energy planning in the following important respects:

- The planning scenarios helped the REAT agencies and public better understand how different factors such as the rate of economic growth, energy efficiency, and mix of renewable technologies might affect the amount of generation and transmission that might be needed to meet renewable energy goals in the Plan Area.
- The planning scenarios helped the agencies select 2040 as a more appropriate planning horizon for the DRECP than 2050.
- The scenarios were also used to compare the different land requirements that may result from different technology mixes. For example, the development area that would be required to accommodate a renewable portfolio consisting of 60% solar generation and 40% wind generation to one in which those percentages were reversed.
- At the end of the process, the planning scenarios collectively provided a rough estimate of the amount of renewable energy capacity that may be needed from the Plan Area by 2040, and they provided a starting point for the acreage requirements

---

5 The calculator spreadsheet is available at several locations on the DRECP website with values that represent the various planning scenarios developed by CEC. The spreadsheet for any of these scenarios can be opened and modified to generate new scenarios. One such example is at http://drecp.org/meetings/2011-12-05_meeting/presentations/D-Vidaver_DRECP_calculator_2011-11-29.xls, with an accompanying explanation of the calculator at http://drecp.org/meetings/2011-12-05_meeting/presentations/D-Vidaver_Calculator_Description-2011-11-29.pdf.

6 See Section I.3.5.3.4 for an explanation of why 2040 was selected as the planning horizon.

necessary when siting generation to keep California on track to meeting its 2050 GHG reduction goals.

- Scenarios were also used to compare how different economic and energy estimates affected the estimated need for renewable energy capacity in the desert.

Planning scenarios ranged from a high of 43,125 MW based on 2050 estimates (CEC 2011d) to a low of 17,121 MW based on 2040 estimates (CEC 2012). The collaborative process of developing and refining planning scenarios culminated in mid-2012 with CEC's release of a revised planning scenario that estimated a need of 17,121 MW of new renewable energy generating and transmission capacity by 2040 to keep California on the trajectory it needs to meet the 2050 GHG emissions reduction target (CEC 2012). Due to the previously described uncertainties with long-range electricity system projections, no single planning scenario was adopted as the basis for determining how much land should be identified for renewable energy project development in the DRECP; instead, the range of scenarios was considered illustrative of the range of potential generation needed by 2040.

The REAT agencies considered the final 17,121 MW planning scenario to be a reasonable estimate of renewable energy needs in the DRECP, and it was one that addressed some of the comments from stakeholders on earlier estimates. For that reason, this particular planning scenario is described in greater detail in Section I.3.5.4.4.

I.3.5.4.4 The July 2012 Planning Scenario

The final planning scenario in July 2012 estimated a need for up to approximately 17,000 MW of incremental renewable energy development in the DRECP. The scenario estimated the net energy for load—the total amount of electricity required to meet demand in California—at 337,000 GWh in 2040, excluding the projected need by 2040 to power electric vehicles. Electrification of the transportation sector was estimated to add an additional 63,074 GWh to the need in 2040. Overall, the July 2012 scenario was about 18,000 GWh less than the estimate in the previous scenario and assumed an annual load growth of 0.586%, which is below historic levels and presumed an overall decline in per-capita consumption of electricity between now and 2040. Planners included these more conservative assumptions in response to revised economic forecasts, public comments on the previous scenarios, and other considerations.

The July 2012 scenario assumed that statewide, utility-side renewable distributed solar generation (small facilities between 2 and 20 MW in size) will provide 24.2% of the state's incremental (i.e., post-January 1, 2011) renewable energy generation capacity in 2040,

followed by central-station solar photovoltaic (18.5%), small rooftop solar (18.0%[7]), wind power (15.8%) central-station solar thermal (9.3%), geothermal (7.7%), and biomass (6.6%). But not all renewable generation was expected to be in the Plan Area. Planners allocated the megawatts associated with each central-station renewable technology to areas in and outside the DRECP based on recent historical trends, as well as technical and economic potential to site certain resources in different regions. The 17,121 MW scenario anticipated, for example, that all 3,612 MW of central-station solar thermal projects will be built within the Plan Area, but that only 70% of the 7,224 MW of central-station photovoltaic projects and only half of the 6,155 MW of wind will be located within the Plan Area.

In addition, this scenario assumed that 25% of the state's anticipated renewable energy in 2040 would be provided in the form of imports into California of renewable electricity generated outside the state. Under the RPS statute, 25% is the maximum level of imports that can be used to satisfy the state's RPS requirement. This scenario is based on achieving a 58% reduction in California's 1990 baseline GHG emissions by 2040, which will keep the state on the linear progress it needs to achieve the targeted 80% reduction in 2050. Following completion of the July 2012 scenario, CEC staff continued to evaluate stakeholder comments and further reviewed the assumed 1990 GHG emission baseline. In constructing the July 2012 scenario, staff made two assumptions related to GHG emissions: (1) the 1990 GHG emissions baseline is 115.84 MMT CO_2E, and (2) GHG offsets would allow the sector to increase GHG emissions above the 2040 cap.

In reviewing the GHG emissions baseline, it was found, however, that the following assumptions are correct: (1) the 1990 GHG emissions baseline is 110.63 MMT CO2E, and (2) the current cap-and-trade regime allows entities with compliance obligations to acquire offsets in lieu of allowances, but does so while reducing allowances issued to a level below the aggregate emissions cap by an amount equal to offsets that may be used. (In other words, the 58% reduction in GHG emissions assumed for 2040 constitutes a hard cap that cannot be exceeded by using offsets, contrary to the assumption made by staff in developing the July 2012 scenario.)

These assumptions were corrected, and the July 2012 scenario was recalculated. As a result, the output of the July 2012 scenario changes as follows: (1) the total zero-carbon load from 336,597 to 355,885 GWh, or about 5.7%, and (2) an additional 19,288 GWh of renewable (i.e., zero-carbon energy) will be necessary. This raises the DRECP capacity need from 17,121 MW as detailed in the original July 2012 scenario to 19,491 MW.

[7] This percentage represents the addition of the 7,000 MW of rooftop solar assumed to be added beyond the 3,000 MW California Solar Initiative target, assumed to be met in the 2009 CEC demand forecast.

Stakeholders have also indicated in their comments that that customer-side distributed generation (i.e., rooftop solar) assumptions in the July 2012 scenario may be too low. Additional customer-side distributed generation was factored into the revised scenario to address this concern, producing the following results: (1) if an additional 5,000 MW of customer-side distributed generation is added, 19,491 MW falls to 18,327 MW; and (2) if an additional 10,000 MW of customer-side distributed generation is added, 19,491 MW falls to 17,163 MW.

An overview of the renewable energy acreage calculator and a more detailed presentation of the revisions to the July 2012 scenario are included in Appendix F3.

I.3.5.4.5 A 20,000-Megawatt Plan

The calculator's revised July 2012 scenario estimates that between 17,163 MW and 19,491 MWs of renewable energy capacity would need to be built in the Plan Area by 2040. Planners determined that a capacity greater than the lowest end of this range should be included in the Plan to account for the inherent uncertainties with all of the various 2040 calculator projections, the potential for unplanned events that could increase the need for renewable electricity from the Plan Area, and the desire to provide flexibility and competitiveness in the development of renewable resources. Furthermore, the other planning scenarios developed over the previous year demonstrated that there are other plausible circumstances where greater renewable generation would be needed within the Plan Area over the same time period to meet California's GHG emissions targets.

The following factors were among the considerations in deciding to plan for more than the low end of the range 17,163 MW:

- Assumptions used in the revised July 2012 scenario, or any of the other planning scenarios, may prove incorrect. For example, developers and utilities might turn to California-based generation to fill more than 75% of the state's renewable energy needs, economic growth might be greater (or future energy efficiency savings might be less) than anticipated in the scenario, or generators might use less than the maximum allowed offsets under the cap-and-trade GHG reduction program. Any of these—or any number of other deviations from calculator values—would increase the need for renewable generation in California, and in the DRECP, higher than anticipated by the calculator.
- Renewable energy development is a market-driven process where flexibility and competition will best serve state and federal policies that encourage development of renewable energy resources. The goals of market flexibility and competition are promoted by providing some head room in the DRECP's capacity and ensuring that the Plan's ability to accommodate needed renewable energy development is not set

so low that it ends up constraining, instead of facilitating, sensible renewable development that minimizes environmental impacts.

- Transmission capacity from any particular DFA will likely need to be expanded to serve new renewable projects in the DFA. The high cost of building new transmission may mean that transmission upgrades will not be economical until a "critical mass" of renewable projects are initiated and begin the process of connecting to the transmission system. This raises the possibility that one or more of the DFAs designated in the DRECP for renewable energy development will not be available to developers. In that case, planning for a higher level of generation and transmission capacity in each of the DFAs will help ensure the DRECP works as intended even if one or more designated DFAs are not available, or immediately available, for renewable energy development in significant quantity.
- Other plausible scenarios for 2040 demonstrated circumstances in which the need for renewable energy resources in the Plan Area could be higher. For example, a 2040 case prepared in October 2011, based on somewhat less conservative assumptions than the revised July 2012 scenario, estimated that 22,000 MW of renewable energy capacity would be needed within the DRECP (CEC 2011c).

With these considerations in mind, the REAT agencies agreed that 20,000 MW was an appropriate capacity for DRECP planning purposes. This number is substantially greater than the low end of the range (17,163 MWs) identified in the final scenario prepared with the calculator, especially since the 20,000 MW does not include renewable projects that have already been approved in the Plan Area. However, in light of the uncertainties of long-term energy projections and the need to plan for a level of renewable development that will not fall short of the basic goals for the DRECP planning effort, the REAT agencies agreed that 20,000 MW was an appropriate planning objective for the DRECP.[8]

A more recent report prepared by the CEC suggests that California's need for electricity may be lower over the next 10 years than the demand that was anticipated at the time DRECP calculations were made. The draft demand forecast prepared by CEC staff in 2013 for the years 2014–2024 anticipates a reduced demand for electricity statewide compared to the forecasts used in the renewable energy calculator from 2011 to 2012 (CEC 2013b). If these forecasts prove true, and if the pattern of lower electricity demand continues through the remainder of the DRECP's 25 years, development of new renewable energy capacity in the DRECP could fall well below the 20,000 MW planned in the DRECP if regulations and policies remain unchanged.

[8] Some variations of the 20,000 MW target can be found in other documents, including the *Description and Comparative Evaluation of Draft DRECP Alternatives* dated December 17, 2012, which used a 20,323 MW target. These differences are relatively minor, and the REAT agencies determined that using a round number as the planning target is more appropriate given the programmatic nature of the DRECP and the imprecision that is inherent in long-term renewable energy projections.

The fact that agencies are planning to accommodate as much as 20,000 MW of renewable generation and transmission does not mean that much development will occur. If energy and economic variables, governmental requirements, and other factors translate into a need for only 10,000 or 15,000 MW of renewable generation in the DRECP, that is all that will be built under the DRECP. On the other hand, if economic or regulatory circumstances change again—if for example the state or federal governments adopt new energy or climate change laws or policies that *increase* the need for renewable energy generation—the DRECP will be better able to achieve its intended purposes of reducing project impacts and conserving sensitive species and habitats.

I.3.5.4.6 Estimating Initial Acreage Requirements for Generation in the Plan Area

The relative mix of renewable generating technologies that are used to achieve Plan-wide energy goals affect the acreage needed to generate any given amount of renewable electricity. Specifically, the relative proportion of utility-scale solar thermal, solar photovoltaic, and wind generation within the 20,000 MW is the biggest variable in trying to predict how many acres would be required for generation within the Plan Area. Further, some technologies, such as utility-scale solar thermal and photovoltaic plants, are likely to be located entirely or predominantly within the DRECP because of the high insolation values in the desert and availability of suitable land. In contrast, other technologies, like wind facilities, are more likely to be, and capable of being, distributed in other parts of the state as well as in the Plan Area. To account for the potential variation in distribution, higher wind and lower wind scenarios were developed from the calculator.

For the purpose of estimating future acreage needed for generation, a conversion factor, (known as the *acreage yield factor*) from megawatts to acres is required. Different technologies require different amounts of land per megawatt of capacity. For example, central-station solar plants require approximately 7 acres per megawatt of capacity, while wind facilities require about 40 acres for every megawatt of generating capacity. This means that megawatt for megawatt, wind generation requires much more land for construction than solar. Table I.3.4 lists the conversion factors for each technology considered within the DRECP. To estimate the minimum footprint for each calculator scenario, the capacity (megawatts) attributed to each technology was multiplied by the acreage yield factor.

To simplify the estimation process, the acreage yield factor associated with each technology was held constant. Although future technological changes are likely to increase energy capacity per acre over the lifetime of the Plan, the incremental introduction of technological improvements would only lead to a gradual reduction in the average acreage requirements across the entire Plan Area. To implicitly account for the future expected increase in generation efficiency, planners used values from the lower end of ranges indicated by

current research. For example, the National Renewable Energy Laboratory (NREL) estimates that the capacity-weighted average of the total land requirement for 1–20 MW solar projects in the United States is 8.9 acres/MW (NREL 2013, p. v); the scenarios developed by CEC staff assume a value of 7.1 acres/MW. NREL estimates a total impact area for wind plants of 72.4 acres (34.5 hectares)/MW (NREL 2009, p. 10); the value used by CEC staff was 40 acres/MW.

Table I.3-4
Acreage Requirements per Megawatt of Generation Capacity

Technology	Acreage Yield Factor (Acres/MW)
Central-station solar thermal	7.1
Central-station solar photovoltaic	7.1
Wind	40
Geothermal	6.0
Utility-scale distributed generation	7.1

Application of an acreage yield factor to the 20,000 MW generation planning goal provided an estimate of the acreage footprint required to construct generation facilities. However, it provided no guidance as to how other environmental factors might influence the acreage needed to allow sufficient flexibility to ultimately site up to 20,000 MW of generation. To assist in estimating the minimum acreage that may be need to successfully site generation, several scenarios that assumed different mixes of solar, wind, and geothermal generation from the calculator were used to develop a range of potential footprint estimates.

For the purpose of estimating the initial acreage requirements for renewable development, a range of "rule of thumb" discount factors was developed by planners in conjunction with CEC staff and industry stakeholders. These factors recognize that not every parcel of land can be developed, nor would every acre of a developable parcel be suitable for development. The use of a siting discount factor sought to account for a variety of different constraints that affect the actual development of generation facilities, including land use constraints, and the extent to which land is parcelized and ownership is fragmented in specific regions. Areas of the DRECP that are highly parcelized (i.e., with multiple small privately owned parcels) were viewed as more difficult to develop and less likely to accommodate generation than areas with larger parcel sizes. Conversely, public lands, which are under the control of a single managing agency, present fewer barriers to development and should have a lower discount factor (e.g., Solar Energy Zones) identified in the BLM Solar Programmatic EIS.

The lower discount factor for initial estimates of generation acreage requirements that assumed three times the raw calculator footprint estimates would be needed to successfully site generation. The upper discount factor assumed that five times the

calculator estimate would be needed to site generation. This gave a range between 861,000 and 1,710,000 acres for generation profiles that were 60% solar and 60% wind development, respectively.

Planners used these estimates in conjunction with the guiding principles laid out in Section I.3.5.3.1 to conceptualize the size and extent of areas that would need to be available for generation, and to identify initial RESAs discussed in the DRECP *Preliminary Conservation Strategy* (Dudek and ICF 2011b). These targets further assisted in understanding the likely degree of conflict with conservation goals. The use of these estimates also provided a target when developing various scenarios that included different subsets of DFAs.

I.3.5.5 Renewable Energy Resource Distribution and Development Potential

Section I.3.5.4 describes the expected generation targets for the Plan Area, but does not provide an assessment of the spatial distributions, extent, or quality of the resource available within the Plan Area. This section summarizes the information provided from state, federal, and stakeholder sources describing the distribution of potential generation resources used by planners in designating the areas best suited for renewable energy development.

Most of the Plan Area is recognized as a world-class renewable energy resource. There are potentially 10 million acres of solar resources, 11.5 million acres of wind resources, and 347,000 acres of geothermal resources within the DRECP boundary. This section describes the information used to move beyond general acreage estimates to characterize renewable energy potential and describes the development assumptions used to refine that potential using more detailed geographic attributes within the Plan Area.

I.3.5.5.1 Estimated Renewable Energy Resource Potential

The following is an assessment of the potential area available for renewable energy development within the Plan Area.

I.3.5.5.1.1 Solar

For solar development, potential solar insolation data from NREL (2009) were mapped across the desert to show relative areas of higher and lower annual solar insolation. These data were used to identify areas with at least 6.5 kWh per square meter per day to support viable solar energy generation from current technologies. Areas of relatively higher solar insolation (ranging from 7.6 to more than 8 kWh per square meter per day) were also identified, primarily in the west Mojave portion of the Plan Area.

Based on NREL (2009) data for solar resources (measured by direct normal solar insolation), approximately 10 million acres within the Plan Area have potential for the

development of solar resources (areas with insolation greater than 6.5 kWh per square meter per day). Geographically, the highest insolation values and greatest concentration of solar resources based on these data are located in the west and central Mojave regions.

I.3.5.5.1.2 Wind

Based on NREL (2009) data for wind resources (measured by meters per second at 50 meters [164 feet] above ground level), approximately 1.5 million acres within the Plan Area have potential for the development of wind resources (wind speeds greater than 5.6 meters [18 feet] per second are considered suitable based on the categories used in this dataset). The greatest concentration of wind resources based on these data are located in the Tehachapi region and various mountain ranges in the central and eastern Mojave regions. New wind speed data measured at 80 meters above ground level is now commercially available. DRECP did not obtain this new data because there was direct input from wind industry stakeholders that was informed by the new (80-meter) wind data (see Section I.3.5.5.2). Instead of using the 80-meter data, industry input was used to verify high-quality wind resource areas previously identified with 50-meter data and to add any additional areas of wind resource not initially identified with the 50-meter data.

I.3.5.5.1.3 Geothermal

Several factors were considered in the delineation of potential geothermal development areas. Known geothermal resource areas (California Department of Conservation 2001) were mapped, in conjunction with the current existing BLM geothermal lease areas. Additional potential geothermal lease areas in the Chocolate Mountains (Imperial County) were also included as potential geothermal development areas. As mapped, these areas represent the extent of the known and commercially operating geothermal resources in the Plan Area.

Approximately 350,000 acres within the Plan Area have been identified as known geothermal resource areas. The geothermal resource areas are concentrated in the Salton Sea and Imperial Valley areas, south of Owens Valley in Inyo County, and the north–central Mojave area.

I.3.5.5.2 Stakeholder-Defined Development Potential

The Center for Energy Efficiency and Renewable Technologies (CEERT) and the Large-Scale Solar Association (LSA) submitted a joint proposal for the development of solar energy in the Plan Area. The CEERT and LSA analysis identifies the chief characteristics of desirable solar resource lands, including above-average insolation, level topography (under 5 degrees of slope), and proximity to transmission (existing or planned high-voltage lines and

substations) (CEERT 2012). CEERT and LSA sought to identify up to two million acres within the DRECP boundary that should be analyzed for conflict with the conservation goals.

In November 2010, the California Wind Energy Association (CalWEA) presented "Wind Resource Considerations for the DRECP Process" to the Resource Mapping Working Group. The presentation included mapping and acreage calculations for areas of potentially viable wind resource development areas within the Plan Area. Subsequently, CalWEA updated its plan and identified wind-development focus areas that "include the highest quality wind resources that are within 10 miles of an existing transmission corridors and do not overlap with lands that have been classified by BLM as having special environmental concerns (Areas of Critical Environmental Concern (ACECs) and Desert Wildlife Management Areas (DWMAs))" (CalWEA 2012).

This information was considered by the REAT Agencies in subsequent development of the DRECP alternatives and DFA configurations.

I.3.5.6 Identification of Development Focus Areas

Using the principles laid out in Section I.3.5.3.1 to utilize disturbed lands where feasible, and to encourage compact development close to existing transmission, the planning process centered DFAs on already disturbed and degraded lands.

In developing the DFAs, the aim was to avoid areas that were viewed as making significant contribution to the biological and non-biological conservation goals. The location size and distribution of DFAs were ultimately the spatial tradeoffs and restrictions placed on the renewable energy resources identified in Section I.3.5.5 by the reserve design envelope, the method for which is discussed in Section I.3.4.4.

Various subsets of DFAs were identified to assist evaluation of the different potential tradeoffs between renewable energy goals and biological and non-biological conservation goals. Each subset of DFAs represented a different set of tradeoffs and resulted in potentially different mixes of energy generation types.

I.3.5.6.1 Estimating Renewable Energy Technology Profiles

To assist with the evaluation of different scenarios, energy profiles were developed based on the distribution of resources available within and between different subsets of DFAs. These profiles were developed to:

- Provide an estimate of the generation distribution for the transmission planning
- Estimate size of impacts to covered biological resources from construction and operational of generation facilities

- Determine the feasibility of any given scenario in relation to conservation goals.
- Estimate the distribution and size of impacts to non-biological resources

Each scenario contained a unique configuration of DFAs with varying quantities of renewable energy resource. Each scenario reflected a different mix of technologies that would combine to produce approximately 20,000 MW of new renewable energy capacity.

To estimate how DFA distribution could affect the mix and distribution of renewable energy development, a method that relied on the size and distribution of DFAs was developed. The method is briefly described below and more extensively described in Appendix F1. The technology profiling method made use of concepts from the calculator, including the acreage yield factor and siting discount factor described in Section I.3.5.4.6.

More extensive analysis was undertaken to arrive at spatially explicit siting discount factors based on the actual degree of parcelization, land ownership, and known regulatory polices of land managers that apply to different parts of the Plan Area (see Appendix F1 for more detailed analysis). To summarize, the acreage yield factor is a property associated with a specific technology, the siting discount factor is associated with a particular subarea of the Plan; the relationship between these factors is given in the equation below.

$$\text{MW per DFA} = \frac{\text{Acres of energy resource}}{\text{Acreage yield factor} \times \text{Siting discount factor}}$$

The application of the method relies on several assumptions or "rules" to ensure that consistent repeatable estimates were produced. The rules can be split into two groups. The first group includes geothermal facilities and utility-scale distributed generation (i.e., generation facilities less than 20 MW); both geothermal and utility-scale distributed generation were assumed to be fully developed in all plan alternatives. These technologies were accounted for first, and acreage occupied by either geothermal or utility-scale distributed generation was assumed unavailable for wind or solar. Geothermal has a relatively small footprint and is limited to specific areas within Imperial Valley and Owens Valley. Full development of geothermal as a baseload resource was viewed as an important statewide goal and therefore given priority. Utility-scale distributed generation was confined to areas with existing transmission facilities and located on disturbed land. As disturbed lands form the core of all DFA alternatives, utility-scale distributed generation was assumed to be less sensitive to changes in DFA configuration, and therefore a constant

in all alternatives. Utility-scale distributed generation is considered technology neutral but is defined as requiring 7.1 acres per megawatt. However, to account for small (1–5 MW) urban/suburban and infill projects, only 80% of all utility-scale distributed generation megawatts are assumed to require development acreage.

The second group includes large utility-scale wind and solar, which were assumed to require several thousand acres for development and would be more sensitive to the variation in availability of DFA acreage. For large-scale wind and solar, an unbiased estimate of generation distribution was developed that relied on the following rules:

1. All acreage within a DFA that was suitable for a given technology was considered of equal value (i.e., there was no weighting or grading of suitability within the DFA); areas were either suitable or unsuitable.
2. Each DFA will accommodate the generation capacity that is proportional to the energy resource capacity that it contains.
3. The area (acreage) of a DFA is a direct measure of the amount of renewable energy resources available. As a consequence of the assumptions described in this section, the acreage of a given DFA used for a particular technology was directly proportional to the total acreage available to that technology across the whole of the Plan Area.
4. No two technologies can have overlapping acreage (i.e., technologies are mutually exclusive). Therefore, for any estimate of technology mix and megawatt distribution, no DFA can be more than 100% utilized. As a consequence, the sum of the areas occupied by all generation types in a DFA is no greater than the total area available within a given DFA. This has implications for the ultimate technology mix that the DRECP can sustain, especially where the potential for solar and wind generation overlap.
5. For the purposes of estimating the distribution of generation capacity (megawatts) across the DFAs, each technology was presumed to have the acreage requirements described in Table I.3-4.
6. For the purposes of estimating the distribution of generation capacity (megawatts) across the DFAs, the DFA development potential is constrained by the siting discount factor described above and in Section I.3.5.4.6. The siting discount factor is a characteristic of a DFA and applies to all technologies within a given DFA.

I.3.5.6.2 Development of Combined Aggregation/Flexibility Scenario

The REAT agencies determined early on that the DRECP would need to provide flexibility to accommodate a variety of technology mixes and development patterns. The acreage needed to generate and deliver 20,000 MW of renewable electricity from the Plan Area is highly

sensitive to the relative mix of solar and wind projects, as explained above. Yet the actual mix of renewable technologies in the desert will not be dictated by the DRECP, instead depending to a great extent on which projects developers bring forward for permitting. A developer's decision whether to seek permits often turns on whether a utility or other retail electricity provider commits to purchase power from the project at a favorable price.

Similarly, neither the DRECP nor the agencies reviewing a project will be making the initial decision about the proposed location of a project within the various DFAs. Which parts of designated DFAs are developed first and which receive the most projects will largely depend on decisions made by project developers and retail electricity providers—subject to agencies' decisions whether to approve the project at the proposed location and what conditions to attach to their approval.

To provide the needed flexibility, a "combined aggregation/flexibility scenario" was produced from the five input scenarios described in Appendix F1. The aggregated scenario used the maximum affected acreage values for each technology from each ecoregion subarea. The combined scenario therefore overstates the amount of renewable energy development that will occur Plan-wide because it shows the maximum number of acres that might be needed in any particular DFA or subarea, but it provides the flexibility needed in the Plan to account for various mixes of technology and development patterns that might occur. Please note, however, that the maximum number of acres that might be needed in any particular DFA or subarea does not represent a "cap" or limit on the megawatts of any particular renewable technology that may be approved for development there.

I.3.5.7 Transmission Planning Goals and Assumptions

The transmission planning undertaken for the DRECP is conceptual and programmatic in nature, intended to provide a reasonable estimate of the amount of new transmission that will be needed to support anticipated renewable energy development in the desert region, as well as its approximate location and acreage. DRECP planners did not attempt to identify and analyze specific new or expanded transmission lines—just as the DRECP does not plan and analyze specific renewable generation projects. Planning for transmission within the DRECP and between the DRECP and load centers requires building upon previous transmission planning efforts.

As part of the DRECP planning process, the Transmission Technical Group (TTG) was formed. The TTG included transmission planners from the major California electric utilities with a direct interest in the DRECP, including Southern California Edison, Los Angeles Department of Water and Power, San Diego Gas and Electric, Imperial Irrigation District, and Pacific Gas and Electric. It also included representatives from the U.S. Department of Defense (DOD), the California Independent System Operator, CPUC, and CEC. The details of TTG's analysis are set forth in Appendix K and include conceptual electric transmission lines within and outside of

the Plan Area. The work of the TTG was coordinated by three co-chairs who represented the California Independent System Operator, CPUC, and CEC.

The Garamendi Principles (SB 2431), which are used in California to minimize the costs and environmental impacts of new transmission projects, were used when preparing the DRECP transmission planning maps; thus map lines that indicate new transmission needs were drawn to follow existing transmission rights-of-way wherever possible (CEC 2007). But otherwise, the line segments represent only the electrical connections (i.e., the end-points of each line segment) and do not reflect specific siting plans or routes for new transmission lines. The new transmission lines identified through this exercise have not been evaluated for the specific locations, constructability, desirability, cost, or likelihood of their successful permitting. They also have not been studied by transmission planning groups to identify reliability concerns or effects on other transmission systems.

Transmission planning for the DRECP was neutral regarding potential transmission owner or developer. The transmission conceptual plan for the DRECP was assumed to serve Plan Area generation growth only, and it was dependent upon the location and extent of the new generation as well as the location of the load center receiving the electricity.

The transmission plan was based on the CEC's estimates of need for renewable energy generating capacity to meet RPS and GHG emissions targets, as described in Section I.3.5.2. The planning process identified, at a very high level, the necessary transmission system facility additions that would likely be needed to accommodate 20,000 MW of renewable generation that could be developed within the 2040 time frame.

The transmission system upgrades assume that a combination of available and new transmission capacity would be utilized to accommodate generation within the DFAs through 2040. The availability of existing transmission is based on the 2020 cases prepared by the California Transmission Planning Group (http://www.ctpg.us). For DRECP planning purposes, the available capacity identified by the California Transmission Planning Group's 2020 cases was also used as the available existing transmission capacity for 2040, since transmission upgrades for load growth and other grid-related expansion requirements were considered likely between 2020 and 2040.

The TTG did not address any transmission that might be built on DOD lands. Instead, the DOD provided the TTG with exit point locations at the military base boundaries for 1,500 MW of new transmission from the bases, and the TTG planned for collector lines to the nearest collector substations. For purposes of this analysis, and at the DOD's request, this 1,500 MW was in addition to the renewable generation included in each of the DRECP alternatives.

The TTG identified transmission system facility additions that would accommodate a specified number of megawatts of renewable generation that could be developed in the DFAs by 2040.

Each new identified element of the transmission system (e.g., substation, transmission line) was assigned a capacity (in megawatts) to accommodate the estimated new generation; the TTG also estimated the amount of land that would be affected by the facility's construction and operation. Standard transmission grid components were assembled to derive a conceptual transmission plan for each alternative. For substations, the estimated acres of permanent impact were based on the transmission voltages that the substations are designed to serve. Transmission line length and width were based on the distance (length) to substation locations and the width of the right-of-way required. Access road length and width were based on the size of the substation, the length of the transmission line, and standard construction methods. Each 230 kilovolt (kV) and 500 kV line was assumed to require a permanent access road. The use of helicopters to install transmission lines could reduce the need for access roads, but such a site-specific analysis was beyond the scope of the TTG effort.

The basic assumptions used to estimate impacts of transmission components included consideration of all transmission lines that are likely to be required to interconnect desert renewable energy projects. This included lines ranging from 34.5 kV to 500 kV, as well as substations and access roads. The amount and location of generation is different for each alternative and is described in Appendix K.

Information on the size and mix of generation technologies and how they are distributed in the DFAs enables the calculation of the expected length of generation interconnection tie lines; number, size, and location of new collector substations; and likely length of delivery lines to the main transmission grid. For transmission, the technology mix is important when assessing the maximum simultaneous delivery capacity for collector lines from all generators since this would indicate the maximum size (in megawatts) of a new line. The maximum simultaneous delivery capacity is defined as the point during the annual load cycle when delivery to load is likely to peak. This is primarily driven by the mix of wind and solar generation. Because solar and wind provide energy at different times of the day, delivery lines were sized to accommodate the expected simultaneous output of the different renewable technologies within each DFA for the time period (month and hour) used to conduct the transmission analysis. To do this, TTG members used their professional judgment to define the percentage of output that would result from the solar, wind, and geothermal generation within each DFA to estimate the maximum simultaneous output.[9] In contrast, collector lines that connect the generators within each DFA to the collector substations are sized to accommodate the maximum possible combined output of all generators within the DFA.

[9] The TTG assumed output at 90% for geothermal facilities, 80% for solar facilities, and between 28% and 52% for wind facilities (based on location).

I.3.6 Plan Integration

As described above, the DRECP planning process integrates three types of mapping elements: (1) BLM land use planning designations, (2) biological Conservation Planning Areas, and (3) renewable energy planning areas. As described further below, BLM land use planning designations are developed using the process described in Section I.3.1 and include conservation designations (NLCS, ACEC, Wildlife Allocation), as well as other designations, such as Special Recreation Management Areas and Extensive Recreation Management Areas. Biological Conservation Planning Areas were developed using the process described in Section I.3.4 and are based on biological (plant and wildlife species and their habitat) considerations and requirements under the NCCPA, ESA, and FLPMA. The renewable energy planning areas were developed using the process described in Section I.3.5 and are based on renewable energy resource considerations reflected in state and federal renewable energy policies, an evaluation of potential future demand for renewable energy represented in the CEC calculator, and renewable energy resource and technology information.

I.3.6.1 BLM Land Use Planning Designations

The BLM land use planning designations include areas suitable for renewable energy development; areas suitable for biological, cultural, and scientific conservation; and areas suitable for an emphasis on recreation, mineral extraction, grazing and other multiple uses. The requirements of Public Law 111-11 for conservation of nationally significant ecological, cultural, and scientific resources lead to the mapped areas identified as National Conservation Lands. The multiple use and sustained yield requirements of FLPMA lead to modifications in the management of recreation (including the establishment of Special Recreation Management Areas and Extensive Recreation Management Areas), allowing for continued exploration of mineral resources, establishment of Visual Resource Management Classes, and grazing. BLM also developed mitigation measures for impacts to the various multiple uses and resources it considers in managing its lands, and developed mitigation measures to maintain multiple use and sustained yield. Tribal input was considered in developing both the DFAs and areas for conservation, to remove important areas from DFAs and ensure adequate protection through inclusion in conservation areas.

BLM participated in the biological conservation planning process and considered conservation biology principles, as well as NCCPA and ESA requirements, in the development of land use designations (BLM LUPA conservation designations) intended to support the conservation and management of natural communities and Covered Species. BLM also participated in the renewable energy planning process in the development of land use designation (DFAs on BLM-administered lands) intended to support renewable energy and transmission development consistent with the goals of the DRECP.

I.3.6.2 Biological Conservation Planning

Each alternative includes a Plan-wide conservation strategy that includes areas for biological conservation, as well as other biological conservation strategy elements, such as CMAs and monitoring and adaptive management. The areas for biological conservation include a reserve design envelope used for the development of the LUPA, NCCP, and GCP, as described in Section I.3.4. The reserve design envelope and other biological Conservation Planning Areas incorporate BLM, NCCP, and GCP biological principles and planning processes, as described in Sections I.3.1, I.3.2, and I.3.3, respectively. The initial steps in identifying and mapping biological Conservation Planning Areas included establishing the conservation focus and defining a proposed Covered Species list, assembling baseline information, and identifying BGOs. The biological conservation planning process follows from these initial steps, as described in Section I.3.4, and concludes with mapping and describing a DRECP Plan-Wide Reserve Design Envelope for each alternative, as described in Section I.3.4.4.5.

The BLM LUPA, NCCP, and GCP focus on different geographical areas within the Plan Area (e.g., BLM-administered lands for the BLM LUPA, nonfederal lands for the GCP, federal and nonfederal lands for the DRECP NCCP). However, DRECP Plan-wide conservation strategy features are common to, and incorporated into, the BLM LUPA, NCCP, and GCP. For example, the LUPA, NCCP, and GCP all use the DRECP Plan-Wide Reserve Design Envelope, Plan-wide BGOs, Step-Down Biological Objectives, and biological Conservation Priority Areas as the basis for identifying biological Conservation Planning Areas specific to each component plan (e.g., BLM LUPA Conservation Designations, NCCP Conceptual Plan-Wide Reserve Design, and nonfederal Conservation Planning Areas in the GCP).

I.3.6.3 Renewable Energy Planning Areas

The renewable energy planning areas (i.e., the DFAs) were developed based on a consideration of mapped renewable energy resources and modeled renewable energy technology profiles on the one hand, and areas with important or sensitive natural resources, as identified in the biological conservation planning process and BLM's land use planning process, on the other. As described in Section I.3.5, the renewable energy planning process is guided by the need to reduce the environmental impacts of anticipated renewable energy development and the need to help achieve state and federal renewable energy goals. The DRECP assumes that renewable energy development will occur in identified DFAs and examines alternative configurations for DFAs and renewable energy technology profiles that could accommodate the development of renewable energy projects capable of generating up to 20,000 MWs of electricity. For planning purposes, the DRECP assumes that there could be a demand for up to 20,000 MWs of renewable energy generation within the term of the DRECP, as described in Section I.3.5. The configurations for DFAs in each DRECP alternative are common to the BLM LUPA, NCCP, and GCP, while recognizing that each of these actions address different geographical areas within the Plan Area.

Exhibit I.3-3 depicts in brief summary form the Plan integration process. The alternatives resulting from this process are described in detail in Volume II.



Exhibit I.3-3 DRECP Plan Integration Process

I.3.7 Duration of the DRECP

I.3.7.1 Bureau of Land Management Land Use Plan Amendment

BLM regulations under 43 CFR 1610.5-5 do not specify a term duration for LUPAs; therefore, the LUPAs approved as part of the DRECP would not expire and would remain in place until amended through future land use planning efforts as described in BLM regulations (43 CFR 1610). The BLM periodically evaluates land use plans to determine if new plan decisions are required (see BLM 2005, pp. 33–38). The plan amendment process is subject to NEPA and includes opportunities for participation by the public and other federal, state, and local agencies. The LUPAs approved as part of the DRECP could be amended in the future pursuant to changing conditions or law and policy as required by federal law and regulation, including FLPMA.

I.3.7.2 Endangered Species Act Incidental Take Permit Duration

The proposed term for any Section 10(a)(1)(B) incidental take permits issued under the GCP component of the DRECP would extend through 2040.

I.3.7.3 Natural Community Conservation Plan Duration

The NCCP portion of the DRECP would be effective through 2040. CDFW and, where it has jurisdiction, CEC would be able to issue incidental take authorization throughout the term of the NCCP.

I.4 LITERATURE CITED – VOLUME I

Chapter I.0 Introduction

14 CCR 15000–15387 and Appendix A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

40 CFR 1500–1508. Regulations for Implementing the Procedural Provisions Of The National Environmental Policy Act. November 28, 1978.

42 U.S.C. 4321–4370f. National Environmental Policy Act of 1969, as amended.

43 CFR Part 46. Implementation of the National Environmental Policy Act of 1969.

California Public Resources Code, Section 21000–21177. California Environmental Quality Act (CEQA), as amended.

Chapter I.1 Objectives/Purpose and Need

16 U.S.C. 470–470x-6. National Historic Preservation Act of 1966, as amended.

16 U.S.C. 1531–1544. Endangered Species Act of 1973, as amended.

36 CFR 800.1–800.16 and Appendix A. Protection of Historic Properties.

40 CFR 1500–1508. Regulations for Implementing the Procedural Provisions Of The National Environmental Policy Act. November 28, 1978.

43 CFR 46. Implementation of the National Environmental Policy Act of 1969.

43 CFR 1600. Land Use Planning.

43 CFR 1610.5-5. Planning, Programming, Budgeting – Resource Management Planning amendment.

43 U.S.C. 1701–1785. Federal Land Policy and Management Act of 1976, as amended.

50 CFR 17.22(b)(5). Permits for Scientific Purposes, Enhancement of Propagation or Survival, or for Incidental Taking.

50 CFR 17.32(b)(5). Permit Issuance Criteria. General Permits.

50 CFR 22.1–22.32. Eagle Permits.

50 CFR 402.1–402.48. Interagency Cooperation- Endangered Species Act of 1973, as amended.

61 FR 26771–26772. Executive Order 13007 of May 24, 1996. "Indian Sacred Cites." http://www.gpo.gov/fdsys/pkg/FR-1996-05-29/pdf/96-13597.pdf.

65 FR 67249. Executive Order 13175 of November 6, 2000: "Consultation and Coordination with Indian Tribal Governments." http://www.gpo.gov/fdsys/pkg/FR-2000-11-09/pdf/00-29003.pdf.

68 FR 10635. Executive Order 13287 of March 3, 2003: "Preserve America." http://www.gpo.gov/fdsys/pkg/FR-2003-03-05/pdf/03-05344.pdf.

77 FR 18887. Executive Order 13604 of March 22, 2012: "Improving Performance of Federal Permitting and Review of Infrastructure Projects." http://www.gpo.gov/fdsys/pkg/FR-2012-03-28/pdf/2012-7636.pdf.

BLM (Bureau of Land Management). 2004. *BLM Manual.* Sections 8100–8170. December 3, 2004. http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/blm_manual.html.

BLM and CSLC (Bureau of Land Management and California State Lands Commission). 2012. "Memorandum of Agreement." May 21, 2012.

BLM and DOE (Bureau of Land Management and Department of Energy). 2010. *Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States (Solar Energy Development PEIS).* December 2010.

California Fish and Game Code, Section 1600–1616. Division 2: Department of Fish and Game, Chapter 6: Fish and Wildlife Protection and Conservation.

California Fish and Game Code, Section 2800–2835. Natural Community Conservation Planning Act. 1991.

California Public Resources Code, Section 8700–8716. School Land Bank Act.

CEC and CDFG (California Energy Commission and California Department of Fish and Game). 2008. "Memorandum of Understanding Between the California Energy Commission and the California Department of Fish and Game Regarding the Establishment of the Renewable Energy Action Team." November 2008.

DOI (Department of the Interior). 2009. Secretarial Order 3285 of March 11, 2009: "Renewable Energy Development by the Department of the Interior."

DOI. 2013. Secretarial Order 3330 of October 31, 2013: "Improving Mitigation Policies and Practices of the Department of the Interior."

Executive Office of the President. 2013. *The President's Climate Action Plan.* June 2013. Accessed February 11, 2014. http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf.

Public Law 111-11. Additions to the National Wilderness Preservation System. March 30, 2009.

Chapter I.2 Legal Framework

14 CCR 15000–15387 and Appendix A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

16 U.S.C. 431–433. American Antiquities Act of 1906.

16 U.S.C. 470–470x-6. National Historic Preservation Act, as amended.

16 U.S.C. 668–668d. Bald and Golden Eagle Protection Act, as amended.

16 U.S.C. 703–712. Migratory Bird Treaty Act, as amended.

16 U.S.C. 791 – 828c. Federal Power Act, as amended.

16 U.S.C. 1241–1251. The National Trails System Act.

16 U.S.C. 1331–1340. Wild Free-Roaming Horse and Burro Act.

16 U.S.C. 1531–1544. Endangered Species Act of 1973, as amended.

30 U.S.C. 21. Mineral Lands Reserved.

30 U.S.C. 21a. National Mining and Minerals Policy; "Minerals" Defined; Execution of Policy Under other Authorized Programs.

30 U.S.C. 181–287. Mineral Leasing Act of 1920, as amended.

30 U.S.C. 1001–1028. Geothermal Steam Act of 1970.

30 U.S.C. 1201–1328. Surface Mining Control and Reclamation Act.

33 U.S.C. 1251–1387. Federal Water Pollution Control Act, as amended (commonly referred to as the Clean Water Act). Congressional Declaration of Goals and Policy Regarding Navigation and Navigable Waters.

37 FR 2877. Executive Order 11644 of February 8, 1972: "Use of Off-Road Vehicles on the Public Lands."

40 CFR 1500–1508. CEQ (Council on Environmental Quality) Regulations for Implementing the Procedural Provisions of NEPA.

42 FR 26959. Executive Order 11989 of May 24, 1977: "Off-Road Vehicles on Public Lands."

42 U.S.C. 1996. Protection and Preservation of Traditional Religions of Native Americans.

42 U.S.C. 4321–4370f. National Environmental Policy Act of 1969, as amended.

42 U.S.C. 15801–16538. Energy Policy Act of 2005, as amended.

43 CFR 46. Implementation of the National Environmental Policy Act of 1969.

43 CFR 2800. Rights-of-Way Under the Federal Land Policy Management Act.

43 CFR 3200–3279. Geothermal Resource Leasing.

43 U.S.C. 315. The Taylor Grazing Act of 1934.

43 U.S.C. 869–869a. Recreation and Public Purposes Program.

43 U.S.C. 1701–1785. Federal Land Policy and Management Act of 1976, as amended.

43 U.S.C. 1901–1908. 1978 Public Rangelands Improvement Act.

49 FR 7629. Executive Order 12898 of February 11, 1994: "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."

50 CFR 10.12. Definitions for the Endangered Species Act.

50 CFR 10.13. List of Migratory Birds.

50 CFR 13.21. Issuance of Permits.

50 CFR 17–17.101. Endangered and Threatened Wildlife and Plants.

50 CFR 21–21.60. Migratory Bird Permits.

50 CFR 22.1–22.32. Eagle Permits.

50 CFR 402.1–402.48. Interagency Cooperation- Endangered Species Act of 1973, as amended.

61 FR 26771–26772. Executive Order 13007 of May 24, 1996. "Indian Sacred Cites." http://www.gpo.gov/fdsys/pkg/FR-1996-05-29/pdf/96-13597.pdf.

63 FR 8859–8873. Habitat Conservation Plan Assurances ("No Surprises") Rule. March 25, 1998.

63 FR 27655. Executive Order 13084 of May 14, 1998: "Consultation and Coordination with Indian Tribal Governments."

64 FR 6183 – 6186. Executive Order 13112 of February 8, 1999: "Invasive Species." http://www.gpo.gov/fdsys/pkg/FR-1999-02-08/pdf/99-3184.pdf.

65 FR 35242–35357. Notice of Availability of a Final Addendum to the Handbook for Habitat Conservation Planning and Incidental Take Permitting Process. June 1, 2000.

74 FR 46836. Eagle Permits: Take Necessary to Protect Interests in Particular Localities. September 11, 2009.

BLM (Bureau of Land Management). 1999. *The California Desert Conservation Area Plan.* Approved 1980, as amended, including changes resulting from the California Desert Protection Act of 1994. Reprinted March 1999. Riverside, California: BLM, Desert District. Accessed December 13, 2010. http://www.blm.gov/ca/st/en/fo/cdd/cdca_q_a.html.

BLM. 2005. *Final Programmatic Environmental Impact Statement on Wind Energy Development and BLM-Administered Lands in the Western United States.* June 2005. Accessed February 11, 2014. http://windeis.anl.gov/documents/fpeis/index.cfm.

BLM. 2008. *6840 – Special Status Species Management.* Release no. 6-125. December 12, 2008. http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.43545.File.dat/6840.pdf.

BLM. 2010a. "Solar Energy Development Policy." Instruction Memorandum No. 2010-141. June 10, 2010.

BLM. 2010b. "Solar Energy Development Policy." Instruction Memorandum No. 2010-141. June 10, 2010.

BLM. 2012. *Final Solar Programmatic Environmental Impact Statement (PEIS) for Solar Energy Development in Six Southwestern States.* July 2012.

BLM and USFS (Bureau of Land Management and U.S. Forest Service). 2008. *Final Programmatic Environmental Impact Statement for Geothermal Leasing in the Western United States*. October 2008. http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS_REALTY_AND_RESOURCE_PROTECTION_/energy/geothermal_eis/final_programmatic.Par.41814.File.dat/Volume_I_FINAL.pdf.

California Fish and Game Code, Section 86. Definition of Take.

California Fish and Game Code, Section 1600–1616. Division 2: Department of Fish and Game, Chapter 6: Fish and Wildlife Protection and Conservation.

California Fish and Game Code, Section 1900–1913. Native Plant Protection Act of 1987.

California Fish and Game Code, Section 2050–2115.5. California Endangered Species Act.

California Fish and Game Code, Section 2800–2835. Natural Community Conservation Planning Act of 1991.

California Fish and Game Code, Section 3500–3516. Division 4: Birds and Mammals, Part 2: Birds, Chapter 1: General Provisions.

California Fish and Game Code, Section 4700. Division 4: Birds and Mammals; Part 3: Mammals; Chapter 8: Fully Protected Mammals.

California Fish and Game Code, Section 5050. Division 5: Protected Reptiles and Amphibians; Chapter 2: Fully Protected Reptiles and Amphibians.

California Fish and Game Code, Section 5500–5522. Division 6: Fish; Chapter 1, Miscellaneous.

California Public Resources Code, Section 6101–6111. The State Lands Commission and the Division of State Lands.

California Public Resources Code, Section 6401–6407. Reservation of Minerals.

California Public Resources Code, Section 8700–8716. School Land Bank Act.

California Public Resources Code, Section 25000–25990. Warren-Alquist State Energy Resources Conservation and Development Act.

CSLC (California State Lands Commission). 2008. "Resolution by the California State Lands Commission Supporting the Environmentally Responsible Development of School Lands under the Commission's Jurisdiction For Renewable Energy Related Projects." Adopted October 16, 2008.

Executive Communication 1504, Ninety-sixth Congress, House Document 96-119.

Public Law 88-577. Wilderness Act of 1964. September 3, 1964.

Public Law 109-58. Energy Policy Act of 2005. August, 8, 2005.

Public Law 111-11. Additions to the National Wilderness Preservation System. March 30, 2009.

Public Law 112-74. Consolidated Appropriations Act, 2012.

DOI (Department of the Interior). 1993. Secretarial Order 3175 of November 8, 1993: "Departmental Responsibilities for Indian Trust Resources."

DOI. 1997. Secretarial Order 3206 of June 5, 1997:"American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act."

DOI. 2003. Secretarial Order 3215 of November 12, 2003: "Principles for the Discharge of the Secretary's Trust Responsibility."

DOI. 2010a. Secretarial Order 3308 of November 15, 2010: "Management of the National Landscape Conservation System."

DOI. 2010b. Amendment No. 1 to Secretarial Order 3285 of February 22, 2010: "Renewable Energy Development by the Department of the Interior." http://elips.doi.gov/app_so/act_getfiles.cfm?order_number=3285A1.

USFWS (U.S. Fish and Wildlife Service). 2000. *Handbook for Habitat Conservation Planning and Incidental Take Permitting Process.*

USFWS. 2007. "Final General Conservation Plan Policy." FWS/AES/DCHRS/032359. October 5, 2007.

Chapter I.3 Planning Process

43 CFR 1610. Resource Management Planning.

43 U.S.C. 1701–1785. Federal Land Policy and Management Act of 1976, as amended.

AB (Assembly Bill) 32. California Global Warming Solutions Act of 2006. California Assembly, 2006.

AB 327. California Renewables Portfolio Standard Program. California Assembly, 2013.

Aerial Information Systems. 2013. *2013 California Vegetation Map in Support of the Desert Renewable Energy Conservation Plan.* Final report. Prepared for California Department of Fish and Wildlife Renewable Energy Program and the California Energy Commission by J. Menke, E. Reyes, A. Glass, D. Johnson, and J. Reyes. April 2013.

BLM (Bureau of Land Management). 2005. *Land Use Planning Handbook.* H-1601-1. Release no. 1-1693. March 11, 2005. Accessed February 10, 2014. http://www.blm.gov/pgdata/etc/medialib/blm/ak/aktest/planning/planning_general.Par.65225.File.dat/blm_lup_handbook.pdf.

California Department of Conservation. 2001. "Known Geothermal Resource Areas" [GIS data].

California Department of Conservation. 2009. "California Farmland Mapping and Monitoring Program" [GIS data].

California Executive Order No. B-16-12 of March 23, 2012. http://gov.ca.gov/news.php?id=17472.

California Executive Order S-3-05 of June 1, 2005. http://gov.ca.gov/news.php?id=1861.

California Executive Order S-14-08 of November 17, 2008. http://gov.ca.gov/news.php?id=11072.

California Public Resources Code, Section 25740–25751. Renewable Energy Resources Program.

California Public Utilities Code, Section 399.11–399.32. California Renewables Portfolio Standard Program.

CalWEA (California Wind Energy Association). 2012. "Proposed DRECP Scenario for Wind Energy Resources." Letter dated April 17, 2012.

Cameron, D., S. Parker, B. Cohen, J. Randall, B. Christian, J. Moore, L. Crane, and S. Morrison. 2012. *Western Mojave Desert Assessment of Least Environmental Conflict for Solar Development and Compensatory Mitigation Framework.* Unpublished Report. San Francisco, California: The Nature Conservancy.

CARB (California Air Resources Board). 2008. *Climate Change Scoping Plan: A Framework for Change.* December 2008. http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm.

CARB. 2013. *Climate Change Scoping Plan First Update, Discussion Draft for Public Review and Comment.* October 1, 2013.

Carroll, C., R.F. Noss, P.C. Paquet, and N.H. Schumaker. 2003. "Use of Population Viability Analysis and Reserve Selection Algorithms in Regional Conservation Plans." *Ecological Applications* 13(6):1,773–1,789. doi: 10.1890/02-5195.

CDFG (California Department of Fish and Game). 2012. *2012 Vegetation Map in Support of the Desert Renewable Energy Conservation Plan*. Interim Report (1.1). Vegetation Classification and Mapping Program for the Desert Renewable Energy Conservation Plan and California Energy Commission. June 2012. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=47996&inline=1.

CEC (California Energy Commission). 2007. "Forms and Instructions for Submitting Transmission-Related Data." Commission Report. January 2007. CEC-700-2007-002-CMF. http://www.energy.ca.gov/2007publications/CEC-700-2007-002/CEC-700-2007-002-CMF.PDF.

CEC. 2011a. *Lead Commissioner Report on Renewable Power in California: Status and Issues.* Publication No. CEC-150-2011-002-LCF-REV1. December 2011.

CEC. 2011b. *Acreage Needed in 2050 for Renewable Generation to Meet California's GHG Emission Reduction Goals.* May 9, 2011.

CEC. 2011c. *2040 and 2050 Acreage Needs for Renewable Generation.* October 21, 2012. http://drecp.org/meetings/2011-12-05_meeting/presentations/D-Vidaver_2040_and_2050_DRECP_WG_Final_10-21-2011.pdf).

CEC. 2011d. 2040-2050 Scenario Description. October 12, 2011. http://drecp.org/meetings/2011-10-12_meeting/20402050_Scenario_Description.pdf.

CEC. 2012. *Desert Renewable Energy Conservation Plan: Renewable Energy Acreage Calculator and the 2040 Revised Scenario's Renewable Portfolio.* July 27, 2012. http://drecp.org/documents/docs/DRECP_Acreage_Calculator_Documentation.pdf.

CEC. 2013a. *2013 Integrated Energy Report.* Draft Lead Commission Report. October 2, 2013.

CEC. 2013b. *Draft Staff Report: California Energy Demand 2014-2024 Revised Demand Forecast.* Publication No. 200-2013-004-SD-V1-REV.

CEC, CDFG, BLM, and USFWS (California Energy Commission, California Department of Fish and Game, Bureau of Land Management, and U.S. Fish and Wildlife Service). 2012. *Description and Comparative Evaluation of Draft DRECP Alternatives* . December 17, 2012. Accessed May 2013. http://www.drecp.org/documents/docs/alternatives_eval/index.php.

CEERT (Center for Energy Efficiency and Renewable Technologies). 2012. CEERT Transmittal Letter. Docket No. 09-Renew EO-0 1, Center for Energy Efficiency and Renewable Technologies' and Large-Scale Solar Association's Proposed Development Focus Areas. March 23, 2012.

CPUC (California Public Utilities Commission). 2013. "RPS Project Status Table." http://www.cpuc.ca.gov/PUC/energy/Renewables/.

Department of the Interior. 2008. "Managing the NEPA Process—Bureau of Land Management." Chapter 11 in *Department Manual*. May 8, 2008. http://www.blm.gov/wo/st/en/prog/planning/nepa/webguide/departmental_manual/516_dm_chapter_11.html.

Department of the Interior. 2010. Amendment No. 1 to Secretarial Order 3285 of February 22, 2010: "Renewable Energy Development by the Department of the Interior." http://elips.doi.gov/app_so/act_getfiles.cfm?order_number=3285A1.

Department of the Interior and the State of California. 2012. *Memorandum of Understanding Between the Department of the Interior and the State of California on Renewable Energy*. January 13, 2012.

DRECP (Desert Renewable Energy Conservation Plan). 2010. *Draft Natural Communities and Covered Species Preliminary Description*. PowerPoint slides. November 17, 2010. http://www.drecp.org/meetings/2010-11-17_meeting/presentations/Draft_Natural_Communities_and_Covered_Species_PD.pdf

DRECP ISA (Desert Renewable Energy Conservation Plan Independent Science Advisors). 2010. *Recommendations of Independent Science Advisors for the California Desert Renewable Energy Conservation Plan (DRECP)*. Public Review Draft. Prepared for the Renewable Energy Action Team: California Department of Fish and Game, U.S. Fish and Wildlife Service, U.S. Bureau of Land Management, and California Energy Commission. August 2010.

DRECP ISP (Desert Renewable Energy Conservation Plan Independent Science Panel). 2012. *Independent Science Review for the California Desert Renewable Energy Conservation Plan (DRECP)*. Final Report. Prepared for the Renewable Energy Action Team: California Department of Fish and Game, U.S. Fish and Wildlife Service, U.S. Bureau of Land Management, and California Energy Commission. November 2012.

Dudek and ICF. 2011a. *DRECP Framework Conservation Strategy Report.* Draft. Prepared for the California Energy Commission. May 4, 2011.

Dudek and ICF. 2011b. *Preliminary Conservation Strategy: Desert Renewable Energy Conservation Plan (DRECP)*. Draft. Prepared for the California Energy Commission. October 26, 2011.

EEEI (Energy and Environmental Economics Inc.). 2009. *Meeting California's Long-Term Greenhouse Gas Reduction Gas Reduction Goals.*

Lennartz, Steven, Tyler Bax, Jocelyn Aycrigg, Anne Davidson, Marion Reid, and Russ Congalton. 2008. *Final Report on Land Cover Mapping Methods.* Map Zones 3, 4, 5, 6, 12, and 13.

Margules, C.R., and R.L. Pressey. 2000. "Systematic Conservation Planning." *Nature* 405:243–253. doi:10.1038/35012251.

Marshall, R.M., S. Anderson, M. Batcher, P. Comer, S. Cornelius, R. Cox, A. Gondor, D. Gori, J. Humke, R. Paredes Aguilar, I.E. Parra, S. Schwartz. 2000. *An Ecological Analysis of Conservation Priorities in the Sonoran Desert Ecoregion.* Prepared by The Nature Conservancy Arizona Chapter, Sonoran Institute, and Instituto del Medio Ambiente y el Desarrollo Sustentable del Estado de Sonora, with support from the Department of Defense Legacy Program, and agency and institutional partners. April 2000.

Moilanen, A., K. Wilson, and H. Possingham, eds. 2009. *Spatial Conservation Prioritization: Quantitative Methods and Computational Tools.* New York, New York: Oxford University Press.

NREL (National Renewable Energy Laboratory). 2009. *Land-Use Requirements of Modern Wind Power Plans in the United States.*

NREL. 2013. *Land-Use Requirements for Solar Power Plants in the United States.* Technical Report NREL/TP-6A20-56290. June 2013. http://www.nrel.gov/docs/fy13osti/56290.pdf.

Randall, J.M., S.S. Parker, J. Moore, B. Cohen, L. Crane, B. Christian, D. Cameron, J. MacKenzie, K. Klausmeyer, and S. Morrison. 2010. *Mojave Desert Ecoregional Assessment.* Unpublished Report; version 1.1. San Francisco, California: The Nature Conservancy. September 2010. Accessed May 2013. http://conserveonline.org/workspaces/mojave/documents/mojave-desert-ecoregional-2010/@@view.html.

SB (Senate Bill) 1078. Topic: Renewable energy: California Renewables Portfolio Standard Program. California Senate, 2002.

SB 2431. Garamendi Principles. Chapter 1457, Statutes of 1988.

Stoms, D.M., S.L. Dashiell, and F.W. Davis. 2011. *Mapping Compatibility to Minimize Biodiversity Impacts of Solar Energy Development in the California Deserts.* Santa Barbara, Biogeography Lab; University of California, Santa Barbara.

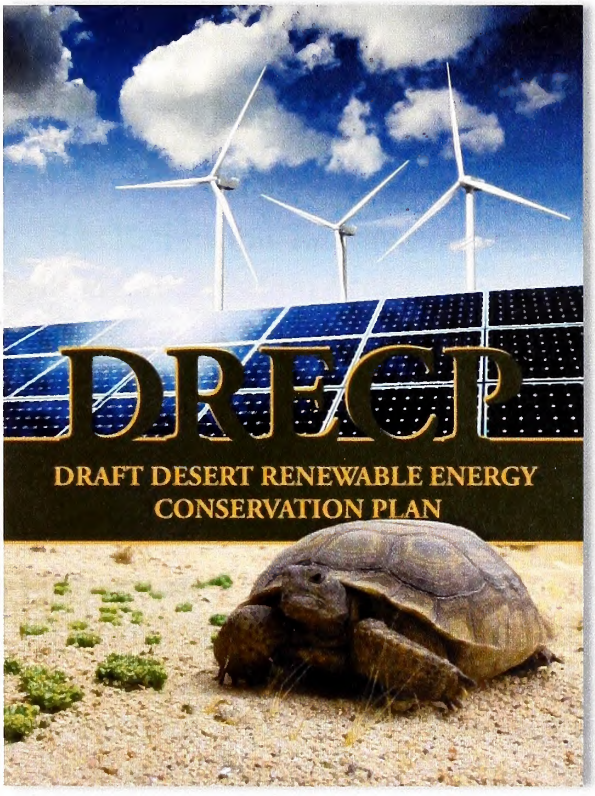
Sun-Herald. 2013. "Mississippi's Kemper Coal Plant Overruns Show Risk of EPA's Carbon Rule."

Volume II

DRAFT

Desert Renewable Energy Conservation Plan (DRECP) and Environmental Impact Report/Environmental Impact Statement

Volume II: Description of Alternatives



Prepared by:

California Energy Commission

California Department of Fish and Wildlife

U.S. Bureau of Land Management

U.S. Fish and Wildlife Service

SEPTEMBER 2014

Printed on 30% post-consumer recycled material.

TABLE OF CONTENTS – VOLUME II

Section **Page No.**

II.1 APPROACH TO DEVELOPING ALTERNATIVES II.1-1
II.1.1 Alternatives Carried Forward for Detailed Analysis II.1-1
II.1.2 Alternatives Not Carried Forward for Detailed Analysis II.1-5

II.2 NO ACTION ALTERNATIVE II.2-1
II.2.1 Plan-Wide Description of the No Action Alternative II.2-1
II.2.1.1 Overview of the No Action Alternative II.2-1
II.2.1.2 Conservation Under the No Action Alternative II.2-4
II.2.1.3 Renewable Energy and Transmission Development Under the No Action Alternative II.2-9
II.2.2 Existing BLM Land Use Plan Elements of the No Action Alternative II.2-25
II.2.2.1 BLM Renewable Energy Policies II.2-25
II.2.2.2 BLM Conservation Areas II.2-31
II.2.2.3 BLM-Specific Management II.2-41
II.2.3 Natural Community Conservation Plan Elements of the No Action Alternative II.2-106
II.2.4 General Conservation Plan Elements of the No Action Alternative II.2-106

II.3 PREFERRED ALTERNATIVE II.3-1
II.3.1 Plan-Wide Description of the Preferred Alternative II.3-1
II.3.1.1 Overview of the Preferred Alternative II.3-1
II.3.1.2 Conservation Strategy II.3-10
II.3.1.3 Monitoring and Adaptive Management Program II.3-89
II.3.1.4 Overview Description of Covered Activities II.3-161
II.3.1.5 Plan Implementation II.3-205
II.3.1.6 Obtaining Federal ESA and NCCPA Take Authorizations for Covered Activities II.3-247
II.3.1.7 Regulatory Assurances Under the NCCP and the GCP II.3-264
II.3.1.8 Cost and Funding II.3-280
II.3.2 BLM LUPA Elements of the Preferred Alternative II.3-298
II.3.2.1 BLM Renewable Energy Policies II.3-303
II.3.2.2 BLM Conservation Areas II.3-313
II.3.2.3 BLM-Specific Conservation and Management Actions II.3-367
II.3.2.4 CDCA Plan Amendments II.3-424
II.3.3 NCCP Elements of the Preferred Alternative II.3-437
II.3.4 GCP Elements of the Preferred Alternative II.3-444
II.3.4.1 Overview of the Non-Federal GCP Lands of the Preferred Alternative II.3-444

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

II.3.4.2 Overview of the GCP Permitting Process II.3-445

II.4 ALTERNATIVE 1 ..... II.4-1
II.4.1 Plan-Wide Description of Alternative 1 ..... II.4-1
II.4.1.1 Overview of Alternative 1 ..... II.4-1
II.4.1.2 Conservation Strategy II.4-3
II.4.1.3 Monitoring and Adaptive Management Program II.4-14
II.4.1.4 Overview Description of Covered Activities II.4-14
II.4.1.5 Plan Implementation II.4-29
II.4.2 BLM LUPA Elements of Alternative 1 ..... II.4-29
II.4.2.1 BLM Renewable Energy Policies II.4-33
II.4.2.2 BLM Conservation Areas II.4-33
II.4.2.3 BLM-Specific CMAs II.4-52
II.4.2.4 California Desert Conservation Area Plan Amendments II.4-54
II.4.3 NCCP Elements of Alternative 1 ..... II.4-54
II.4.4 GCP Elements of Alternative 1 ..... II.4-55
II.4.4.1 Overview of the Nonfederal GCP Lands of Alternative 1 ..... II.4-56
II.4.4.2 Overview of the GCP Permitting Process II.4-56

II.5 ALTERNATIVE 2 ..... II.5-1
II.5.1 Plan-Wide Description of Alternative 2 ..... II.5-1
II.5.1.1 Overview of Alternative 2 ..... II.5-1
II.5.1.2 Conservation Strategy II.5-3
II.5.1.3 Monitoring and Adaptive Management Program II.5-18
II.5.1.4 Overview Description of Covered Activities II.5-18
II.5.1.5 Plan Implementation II.5-34
II.5.2 BLM LUPA Elements of Alternative 2 ..... II.5-34
II.5.2.1 BLM Renewable Energy Policies II.5-36
II.5.2.2 BLM Conservation Areas II.5-36
II.5.2.3 BLM-Specific CMAs II.5-58
II.5.2.4 CDCA Plan Amendments II.5-62
II.5.3 NCCP Elements of Alternative 2 ..... II.5-62
II.5.4 GCP Elements of Alternative 2 ..... II.5-63
II.5.4.1 Overview of the Nonfederal GCP Lands of Alternative 2 ..... II.5-63
II.5.4.2 Overview of the GCP Permitting Process II.5-64

II.6 ALTERNATIVE 3 ..... II.6-1
II.6.1 Plan-Wide Description of Alternative 3 ..... II.6-1

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

II.6.1.1 Overview of Alternative 3 ..... II.6-1
II.6.1.2 Conservation Strategy II.6-4
II.6.1.3 Monitoring and Adaptive Management Program II.6-14
II.6.1.4 Overview Description of Covered Activities II.6-14
II.6.1.5 Plan Implementation II.6-29
II.6.2 BLM LUPA Elements of Alternative 3 ..... II.6-29
II.6.2.1 BLM Renewable Energy Policies II.6-33
II.6.2.2 BLM Conservation Areas II.6-33
II.6.2.3 BLM-Specific CMAs II.6-49
II.6.2.4 CDCA Plan Amendments II.6-53
II.6.3 NCCP Elements of Alternative 3 ..... II.6-53
II.6.4 GCP Elements of Alternative 3 ..... II.6-59
II.6.4.1 Overview of the Nonfederal GCP Lands of Alternative 3 ..... II.6-59
II.6.4.2 Overview of the GCP Permitting Process II.6-60

II.7 ALTERNATIVE 4 ..... II.7-1
II.7.1 Interagency Description of Alternative 4 ..... II.7-1
II.7.1.1 Overview of Alternative 4 ..... II.7-1
II.7.1.2 Conservation Strategy II.7-4
II.7.1.3 Monitoring and Adaptive Management Program II.7-14
II.7.1.4 Overview Description of Covered Activities II.7-14
II.7.1.5 Plan Implementation II.7-29
II.7.2 BLM LUPA Elements of Alternative 4 ..... II.7-29
II.7.2.1 BLM Renewable Energy Policies II.7-33
II.7.2.2 BLM Conservation Areas II.7-33
II.7.2.3 BLM-Specific CMAs II.7-50
II.7.2.4 CDCA Plan Amendments II.7-52
II.7.3 NCCP Elements of Alternative 4 ..... II.7-52
II.7.4 GCP Elements of Alternative 4 ..... II.7-55
II.7.4.1 Overview of the Nonfederal GCP Lands of Alternative 4 ..... II.7-56
II.7.4.2 Overview of the GCP Permitting Process II.7-56

II.8 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD II.8-1
II.8.1 Context for Alternatives Considered but Not Carried Forward for Detailed Analysis II.8-4
II.8.1.1 NEPA Requirements for Alternatives II.8-5
II.8.1.2 CEQA Requirements for Alternatives II.8-5

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

II.8.2 Description and Rationale for Alternatives Considered but Not Carried Forward for Detailed Analysis II.8-6
II.8.2.1 Distributed Generation Alternative II.8-6
II.8.2.2 CEERT and LSA Proposed Solar Areas Alternative II.8-10
II.8.2.3 CalWEA Proposed Wind Areas Alternative II.8-14
II.8.2.4 BLM-Only Lands Alternative II.8-17
II.8.2.5 Private and Previously Disturbed Lands Alternative II.8-20
II.8.2.6 Dispersed Development Alternative II.8-22
II.8.2.7 Southeast Emphasis Alternative II.8-24
II.8.2.8 Avian Avoidance Alternative II.8-30

II.9 LITERATURE CITED – VOLUME II II.9-1
Chapter II.1 Approach to Developing Alternatives II.9-1
Chapter II.2 No Action Alternative II.9-1
Chapter II.3 Preferred Alternative II.9-3
Chapter II.4 Alternative 1 ..... II.9-12
Chapter II.5 Alternative 2 ..... II.9-13
Chapter II.6 Alternative 3 ..... II.9-13
Chapter II.7 Alternative 4 ..... II.9-13
Chapter II.8 Alternatives Considered but Not Carried Forward II.9-14

TABLE OF CONTENTS (CONTINUED)

Page No.

EXHIBITS

II.1-1 Components of the DRECP II.1-3
II.3-1 Map Legends Definitions II.3-5
II.3-2 Components of the Preferred Alternative II.3-10
II.3-3 Biological CMAs Structure II.3-22
II.3-4 Avoidance and Minimization CMAs II.3-26
II.3-5 Tiered Compensation System II.3-84
II.3-6 The Adaptive Management Cycle of the DRECP Adaptive Management Framework II.3-143
II.3-7 Terrestrial Landscape Intactness in Six Classes from Very High (Relatively Undisturbed in Dark Green) to Very Low (Highly Disturbed from Agriculture, Resource Development, or Urbanization in Dark Blue) II.3-147
II.3-8 DRECP Implementation Structure II.3-207
II.3-9 Summary Submittal and Review Process for Projects Seeking Streamlining Under DRECP Including Required Avoidance, Minimization, and Mitigation Requirements II.3-233
II.4-1 Components of Alternative 1 ..... II.4-3
II.5-1 Components of Alternative 2 ..... II.5-3
II.6-1 Components of Alternative 3 ..... II.6-3
II.7-1 Components of Alternative 4 ..... II.7-3

FIGURES

II.2-1 No Action Alternative II.2-5
II.2-2 BLM Decision Area and Applicable Existing Management II.2-27
II.2.3 Solar Programmatic Environmental Impact Statement Designations II.2-29
II.2-4 Geothermal Programmatic Environmental Impact Statement Areas Available for Leasing II.2-33
II.3-1 Preferred Alternative II.3-7
II.3-2 Preferred Alternative - Plan-Wide Reserve Design II.3-19
II.3-3 Preferred Alternative - Plan-Wide DFAs II.3-163
II.3-4 Preferred Alternative - BLM LUPA II.3-301
II.3-5 Preferred Alternative - Visual Resource Management Classes II.3-417
II.3-6 Preferred Alternative - Lands Managed to Protect Wilderness Characteristics II.3-435
II.3-7 Preferred Alternative – Natural Community Conservation Plan II.3-441

TABLE OF CONTENTS (CONTINUED)

Page No.

II.3-8	Preferred Alternative - General Conservation Plan	II.3-447
II.4-1	Alternative 1	II.4-5
II.4-2	Alternative 1 - Plan-Wide Reserve Design Envelope	II.4-11
II.4-3	Alternative 1 - Plan-Wide DFAs	II.4-19
II.4-4	Alternative 1 - BLM LUPA	II.4-31
II.4-5	Alternative 1 - Visual Resource Management Classes	II.4-57
II.4-6	Alternative 1 - Natural Community Conservation Plan	II.4-59
II.4-7	Alternative 1 - General Conservation Plan	II.4-61
II.5-1	Alternative 2	II.5-5
II.5-2	Alternative 2 - Plan-Wide Reserve Design Envelope	II.5-11
II.5-3	Alternative 2 - Plan-Wide DFAs	II.5-21
II.5-4	Alternative 2 - BLM LUPA	II.5-37
II.5-5	Alternative 2 - Lands Managed to Protect Wilderness Characteristics	II.5-59
II.5-6	Alternative 2 - Visual Resource Management Classes	II.5-65
II.5-7	Alternative 2 - Natural Community Conservation Plan	II.5-67
II.5-8	Alternative 2 - General Conservation Plan	II.5-69
II.6-1	Alternative 3	II.6-5
II.6-2	Alternative 3 - Plan-Wide Reserve Design Envelope	II.6-11
II.6-3	Alternative 3 - Plan-Wide DFAs	II.6-15
II.6-4	Alternative 3 - BLM LUPA	II.6-31
II.6-5	Alternative 3 - Lands Managed to Protect Wilderness Characteristics	II.6-51
II.6-6	Alternative 3 - Visual Resource Management Classes	II.6-55
II.6-7	Alternative 3 - Natural Community Conservation Plan	II.6-57
II.6-8	Alternative 3 - General Conservation Plan	II.6-61
II.7-1	Alternative 4	II.7-5
II.7-2	Alternative 4 - Plan-Wide Reserve Design Envelope	II.7-11
II.7-3	Alternative 4 - Plan-Wide DFAs	II.7-19
II.7-4	Alternative 4 - BLM LUPA	II.7-31
II.7-5	Alternative 4 - Visual Resource Management Classes	II.7-53
II.7-6	Alternative 4 – Natural Community Conservation Plan	II.7-57
II.7-7	Alternative 4 - General Conservation Plan	II.7-59
II.8-1	DRECP Plan-Wide Energy Assumptions - CEERT, LSA, and CalWEA Proposals	II.8-11
II.8-2	Scenario 6	II.8-25
II.8-3	Southeast Emphasis Alternative	II.8-27

TABLE OF CONTENTS (CONTINUED)

Page No.

TABLES

II.2-1	No Action Alternative	II.2-3
II.2-2a	Conservation under the No Action Alternative by County	II.2-7
II.2-2b	Conservation under the No Action Alternative by Ownership Class	II.2-8
II.2-2c	Conservation under the No Action Alternative by Ecoregion Subarea	II.2-8
II.2-3	No Action Alternative – Existing Resource Management Planning Documents	II.2-10
II.2-4a	Areas Available for Potential Development under the No Action Alternative by Technology Type and by County	II.2-14
II.2-4b	Areas Available for Potential Development under the No Action Alternative by Ownership	II.2-16
II.2-5	Summary of Anticipated Long-Term Disturbance and Project Area Acreage for All Renewable Generation Technologies under No Action	II.2-16
II.2-6	Distribution of Long-Term Disturbance and Project Area Acreages Associated with Solar and Distributed Generation Across DRECP Ecoregion Subareas Under the No Action Alternative	II.2-18
II.2-7	Potential Distribution of Long-Term Disturbance, Rotor Swept Area, and Project Area Acreages Associated with Wind Generation Across DRECP Ecoregion Subareas Under the No Action Alternative	II.2-19
II.2-8	Potential Distribution of Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation Across DRECP Ecoregion Subareas Under the No Action Alternative	II.2-21
II.2-9	Right-of-Way Requirements for Transmission Associated with Renewable Energy Development in the No Action Alternative	II.2-23
II.2-10	Right-of-Way Requirements for Transmission Outside the DRECP Plan Area Associated with Renewable Energy Development – No Action	II.2-24
II.2-11	Management Areas for Fish and Wildlife (Table Updated February 1999)	II.2-36
II.2-12	Existing Multiple Use Classes in the CDCA as Amended (acreage includes major amendments listed below)	II.2-59
II.2-13	Visual Resource Management Classes within Imperial Sand Dunes Planning Area	II.2-97
II.3-1	Interagency DRECP Plan-Wide Preferred Alternative	II.3-9
II.3-2	Proposed Covered Species List	II.3-12
II.3-3	Preferred Alternative Reserve Design Envelope by County	II.3-15

TABLE OF CONTENTS (CONTINUED)

Page No.

II.3-4	Preferred Alternative Reserve Design Envelope by Ownership Class	II.3-16
II.3-5	Preferred Alternative Reserve Design Envelope by Ecoregion Subarea	II.3-16
II.3-6	Riparian and Wetland Avoidance and Setbacks	II.3-48
II.3-7	Agriculture Covered Species Survey Requirements	II.3-56
II.3-8	Agriculture Covered Species Setbacks	II.3-57
II.3-9	Plant Covered Species Suitable Habitat Disturbance Caps	II.3-60
II.3-10	Individual Species Survey Requirements	II.3-61
II.3-11	Individual Species Setback Requirements	II.3-62
II.3-12	Desert Tortoise Ground Disturbance Caps in the BLM LUPA Conservation Designations	II.3-74
II.3-13	Compensation Ratios for the Impacts[1] of DRECP Covered Activities in the DFAs	II.3-87
II.3-14	Compensation Ratios for the Impacts of Transmission Covered Activities in the Plan-wide Reserve Design Envelope	II.3-87
II.3-15	Relationship of MAMP to Other Parts of the DRECP	II.3-90
II.3-16	Effectiveness Monitoring Framework Elements and Phasing	II.3-104
II.3-17	Covered Species Effectiveness Monitoring Approach and Considerations	II.3-111
II.3-18	Preferred Alternative Development Focus Areas by Ecoregion Subarea and Subunit	II.3-162
II.3-19a	Preferred Alternative Development Focus Areas by County by Technology Type	II.3-165
II.3-19b	Preferred Alternative Development Focus Areas by Ownership Class	II.3-166
II.3-20	Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies	II.3-167
II.3-21	Description of Activities Associated with Solar Energy Generation	II.3-171
II.3-22	Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Preferred Alternative	II.3-178
II.3-23	Description of Activities Associated with Wind Energy Generation	II.3-179
II.3-24	Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subarea – Preferred Alternative	II.3-187
II.3-25	Description of Activities Associated with Geothermal Energy Generation	II.3-189

TABLE OF CONTENTS (CONTINUED)

Page No.

II.3-26	Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Preferred Alternative	II.3-194
II.3-27	Typical ROW Widths and Linear Impacts of Bulk Transmission	II.3-196
II.3-28	Typical Substation Size	II.3-197
II.3-29	Description of Activities Associated with Transmission, Substations, and Generator Tie Lines	II.3-197
II.3-30	ROW Requirements for Transmission Associated with the Renewable Energy Development by Ecoregion Subarea – Preferred Alternative	II.3-202
II.3-31	ROW Requirements for Transmission Outside the Plan Area Associated with Renewable Energy Development – Preferred Alternative	II.3-204
II.3-32	DRECP Covered Species for Which Take Will Be Allocated	II.3-254
II.3-33	RECP Take Allocation Ledger Template	II.3-264
II.3-34	Proportion of Acquisition and Non-Acquisition Compensation	II.3-283
II.3-35	NPV of Mitigation Acquisition Cost Estimates Using Preferred Alternative Acreage ($ Millions)	II.3-286
II.3-36	Five Year Snapshots for Per Acre Acquisition and Management Costs	II.3-286
II.3-37	Open Space—NPV of Mitigation Acquisition Cost Estimates in Mid-Case Using Preferred Alternative Acreage and Lowest Cost First Compensation Acreage Selection Criteria ($ Millions)	II.3-287
II.3-38	NPV of Non-Acquisition Mitigation Cost Estimates ($ Millions)	II.3-288
II.3-39	Range of Total Estimated NPV Cost for Biological Objectives Mitigation in the Preferred Alternative ($ Millions)	II.3-289
II.3-40	NPV of Mitigation Cost Estimates for Alternatives 1–4 Using Mid Case Lowest Cost First Compensation Acreage Selection Criteria ($ Millions)	II.3-289
II.3-41	Total Estimated NPV Cost per Acre Impacted	II.3-290
II.3-42	Interagency Preferred Alternative within the BLM LUPA	II.3-299
II.3-43	Preferred Alternative BLM LUPA Conservation Designations within the BLM LUPA	II.3-300
II.3-44	Preferred Alternative SRMAs and ERMAs within the BLM LUPA	II.3-303
II.3-45	DRECP Incentives for Renewable Energy Development within Development Focus Areas on BLM-Administered Land	II.3-304
II.3-46	Solar PEIS ROD Variance Land Screening Criteria with New, Updated, or Finer Scale Data and Land Use Plan Specific Screening Criteria Used to Identify DRECP Variance Lands	II.3-309

TABLE OF CONTENTS (CONTINUED)

Page No.

II.3-47	BLM Solar and Wind Applications with Possible Draft EIS within 60 days of DRECP Draft EIS As of July 28, 2014	II.3-312
II.3-48	Additional California BLM First-in-Line Solar Applications within a Solar Energy Zone	II.3-313
II.3-49	Livestock Utilization Limits of Key Perennial Species	II.3-389
II.3-50	CDCA Plan and DRECP Preferred Alternative Crosswalk	II.3-426
II.3-51	NCCP for the Preferred Alternative	II.3-439
II.3-52	Preferred Alternative within the GCP	II.3-445
II.4-1	Interagency DRECP Plan-Wide Alternative 1	II.4-2
II.4-2	DRECP Plan-Wide Reserve Design Envelope for Alternative 1 by County	II.4-7
II.4-3	DRECP Plan-Wide Reserve Design Envelope for Alternative 1 by Ownership Class	II.4-8
II.4-4	DRECP Plan-Wide Reserve Design Envelope for Alternative 1 by Ecoregion Subarea	II.4-9
II.4-5a	Alternative 1 Development Focus Areas by Ecoregion Subarea and Subunit	II.4-15
II.4-5b	Alternative 1 Development Focus Areas by Technology Type by County	II.4-17
II.4-5c	Alternative 1 Development Focus Areas by Ownership Class	II.4-17
II.4-6	Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies Under Alternative 1	II.4-18
II.4-7	Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 1	II.4-22
II.4-8	Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subarea – Alternative 1	II.4-24
II.4-9	Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Alternative 1	II.4-26
II.4-10	Right-of-Way Requirements for Transmission Associated with Renewable Energy Development by Ecoregion Subarea – Alternative 1	II.4-27
II.4-11	Right-of-Way Requirements for Transmission Outside the DRECP Plan Area Associated with Renewable Energy Development – Alternative 1	II.4-28
II.4-12	Interagency Alternative 1 Within the BLM LUPA	II.4-29
II.4-13	Alternative 1 BLM LUPA Conservation Designations Within the BLM LUPA	II.4-30

TABLE OF CONTENTS (CONTINUED)

Page No.

II.4-14	Alternative 1 Special Recreation Management Areas and Extensive Recreation Management Areas Within the BLM LUPA	II.4-33
II.4-15	NCCP for Alternative 1	II.4-55
II.4-16	Alternative 1 Within the GCP	II.4-56
II.5-1	Interagency DRECP Plan-Wide Alternative 2	II.5-2
II.5-2	DRECP Plan-Wide Reserve Design Envelope for Alternative 2 by County	II.5-7
II.5-3	DRECP Plan-Wide Reserve Design Envelope for Alternative 2 by Ownership Class	II.5-8
II.5-4	DRECP Plan-Wide Reserve Design Envelope for Alternative 2 by Ecoregion Subarea	II.5-9
II.5-5	Riparian and Wetland Avoidance and Setbacks	II.5-14
II.5-6	Compensation Ratios for the Impacts1 of DRECP Covered Activities in the DFAs	II.5-16
II.5-7	Compensation Ratios for the Impacts of Transmission Covered Activities in the DRECP Plan-Wide Reserve Design Envelope	II.5-17
II.5-8a	Alternative 2 Development Focus Areas by Ecoregion Subarea and Subunit	II.5-19
II.5-8b	Alternative 2 Development Focus Areas by Technology Type by County	II.5-23
II.5-8c	Alternative 2 Development Focus Areas by Ownership Class	II.5-24
II.5-9	Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies under Alternative 2	II.5-25
II.5-10	Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 2	II.5-26
II.5-11	Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subareas – Alternative 2	II.5-28
II.5-12	Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Alternative 2	II.5-30
II.5-13	Right-of-Way Requirements for Transmission Associated with Renewable Energy Development by Ecoregion Subarea – Alternative 2	II.5-32
II.5-14	Right-of-Way Requirements for Transmission Outside the DRECP Plan Area Associated with Renewable Energy Development – Alternative 2	II.5-33
II.5-15	Interagency Alternative 2 Within the BLM LUPA	II.5-34

TABLE OF CONTENTS (CONTINUED)

Page No.

II.5-16	Alternative 2 BLM LUPA Conservation Designations Within the BLM LUPA	II.5-35
II.5-17	Alternative 2 Special Recreation Management Areas and Extensive Recreation Management Areas Within the BLM LUPA	II.5-36
II.5-18	NCCP for Alternative 2	II.5-63
II.5-19	Alternative 2 Within the GCP	II.5-64
II.6-1	Interagency DRECP Plan-Wide Alternative 3	II.6-2
II.6-2	DRECP Plan-Wide Reserve Design Envelope for Alternative 3 by County	II.6-8
II.6-3	DRECP Plan-Wide Reserve Design Envelope for Alternative 3 by Ownership Class	II.6-8
II.6-4	DRECP Plan-Wide Reserve Design Envelope for Alternative 3 by Ecoregion Subarea	II.6-9
II.6-5a	Alternative 3 Development Focus Areas by Ecoregion Subarea and Subunit	II.6-17
II.6-5b	Alternative 3 Development Focus Areas by Technology Type by County	II.6-18
II.6-5c	Alternative 3 Development Focus Areas by Ownership Class	II.6-19
II.6-6	Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies Under Alternative 3	II.6-20
II.6-7	Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 3	II.6-21
II.6-8	Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subarea – Alternative 3	II.6-23
II.6-9	Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Alternative 3	II.6-26
II.6-10	Right-of-Way Requirements for Transmission Associated with Renewable Energy Development by Ecoregion Subarea – Alternative 3	II.6-27
II.6-11	Right-of-Way Requirements for Transmission Outside the Plan Area Associated with Renewable Energy Development – Alternative 3	II.6-28
II.6-12	Interagency Alternative 3 Within the BLM LUPA	II.6-29
II.6-13	Alternative 3 BLM LUPA Conservation Designations Within the BLM LUPA	II.6-30

TABLE OF CONTENTS (CONTINUED)

Page No.

II.6-14	Alternative 3 Special Recreation Management Areas and Extensive Recreation Management Areas Within the BLM LUPA	II.6-30
II.6-15	NCCP for Alternative 3	II.6-54
II.6-16	Alternative 3 within the GCP	II.6-59
II.7-1	Interagency DRECP Plan-Wide Alternative 4	II.7-2
II.7-2	DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by County	II.7-7
II.7-3	DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by Ownership Class	II.7-8
II.7-4	DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by Ecoregion Subarea	II.7-9
II.7-5a	Alternative 4 Development Focus Areas by Ecoregion Subarea and Subunit	II.7-15
II.7-5b	Alternative 4 Development Focus Areas by Technology Type by County	II.7-17
II.7-5c	Alternative 4 Development Focus Areas by Ownership Class	II.7-18
II.7-6	Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies under Alternative 4	II.7-18
II.7-7	Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 4	II.7-22
II.7-8	Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subarea – Alternative 4	II.7-24
II.7-9	Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Alternative 4	II.7-26
II.7-10	Right-of-Way Requirements for Transmission Associated with Renewable Energy Development by Ecoregion Subarea – Alternative 4	II.7-27
II.7-11	Right-of-Way Requirements for Transmission Outside the DRECP Plan Area Associated with the Renewable Energy Development – Alternative 4	II.7-28
II.7-12	Interagency Alternative 4 within the BLM LUPA	II.7-29
II.7-13	Alternative 4 BLM LUPA Conservation Designations within the BLM LUPA	II.7-30

TABLE OF CONTENTS (CONTINUED)

Page No.

II.7-14 Alternative 4 Special Recreation Management Areas and Extensive Recreation Management Areas Within the BLM LUPA II.7-33
II.7-15 NCCP for Alternative 4 ..... II.7-55
II.7-16 Alternative 4 within the GCP II.7-56
II.8-1 Acreage of CEERT and LSA Alternative Included in the Retained Alternatives II.8-13
II.8-2 Acreage of CalWEA Alternative Included in the Retained Alternatives II.8-16
II.8-3 Acreage of BLM Land Alternative Included in the Retained Alternatives II.8-19
II.8-4 Acreage of Private and Previously Disturbed Land Alternative Included in the Retained Alternatives II.8-22

ACRONYM LIST

ACEC	Area of Critical Environmental Concern
AML	Appropriate Management Level
ATV	all-terrain vehicle
BAT	Bat Covered Species
BBCS	bird and bat conservation strategy
BGOs	Biological Goals and Objectives
BLM	Bureau of Land Management
CAA	Clean Air Act
CalWEA	California Wind Energy Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CDCA	California Desert Conservation Area
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEERT	Center for Energy Efficiency and Renewable Technologies
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Commission
CFR	Code of Federal Regulations
CMAs	Conservation and Management Actions
COS	Condor Operations Strategy
CPV	concentrating photovoltaic
CSLC	California State Lands Commission
CSP	concentrated solar power
DFAs	Development Focus Areas
DRECP	Desert Renewable Energy Conservation Plan
DUNE	Dune Natural Communities and Covered Species
DWMA	Desert Wildlife Management Area
EA	environmental analysis
ECCMP	Environmental and Construction Compliance Monitoring Plan
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
FAA	Future Assessment Area
FEMA	Federal Emergency Management Agency
FLPMA	Federal Land Policy and Management Act
GCP	General Conservation Plan
GHG	greenhouse gas

GIS	geographic information system
HCP	Habitat Conservation Plan
HMAP	Herd Management Area Plan
HMA	Herd Management Area
ICAPCD	Imperial County Air Pollution Control District
ICS	Individual Covered Species
IID	Imperial Irrigation District
INRMP	Integrated Natural Resources Management Plan
ISD	Imperial Sand Dunes
LCRMSCP	Lower Colorado River Multi-Species Conservation Program
LLPAs	Legislatively and Legally Protected Areas
LSA	Large-Scale Solar Association
LSU	Limited Surface Use
LUPA	Land Use Plan Amendment
MAMP	Monitoring and Adaptive Management Program
MEMLs	Military Expansion Mitigation Lands
MOU	Memorandum of Understanding
MUC	Multiple Use Class
MW	megawatt
MWD	Metropolitan Water District of Southern California
MWRs	more minimization water rights
MW	megawatt
NCCP	Natural Community Conservation Plan
NCCPA	Natural Community Conservation Planning Act
NECO	Northern and Eastern Colorado Desert Coordinated Management Plan
NEMO	Northern and Eastern Mojave Desert Management Plan
NEPA	National Environmental Policy Act
NHT	National Historic Trail
NLCS	National Landscape Conservation System
NOI	Notice of Intent
NOP	Notice of Preparation
NPS	National Park Service
NPV	net present value
NSHT	National Scenic and Historic Trails
OHV	off-highway vehicle
ONC	Other Natural Communities
OP	observation post
PEIS	Programmatic Environmental Impact Statement
PFC	proper functioning conditions
PFYC	Potential Fossil Yield Classification

Plan	Desert Renewable Energy Conservation Plan
PLANT	Plant Covered Species
PV	photovoltaic
REAT	Renewable Energy Action Team
RIPWET	Riparian and Wetland Natural Communities and Covered Species
RMP	Resource Management Plan
RMS	Rangewide Management Strategy
ROD	Record of Decision
ROW	right-of-way
RPS	Renewable Portfolio Standard
SA	Special Areas
SAA	Special Analysis Area
SEZ	Solar Energy Zone
SHC	Strategic Habitat Conservation
SHPO	State Historical Preservation Office
SMRA	State Mining and Reclamation Act of 1975
SOP	Standard Operating Procedure
SRMA	Special Recreation Management Areas
TCA	desert tortoise conservation area
TTG	Transmission Technical Group
TTMP	Trails and Travel Management Plan
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WECO	Western Colorado Desert
WEMO	West Mojave Plan
WHMA	Wildlife Habitat Management Area
WSA	Wilderness Study Area

INTENTIONALLY LEFT BLANK

II.1 APPROACH TO DEVELOPING ALTERNATIVES

The conservation and renewable energy planning processes used to develop the Desert Renewable Energy Conservation Plan (DRECP or Plan) and Environmental Impact Report/Environmental Impact Statement (EIR/EIS) are described in detail in Volume I, Background and Planning Process, of this document. Those planning processes, together with stakeholder and public input gained through community outreach efforts including scoping, seven Tribal–Federal Leadership Conferences, and Bureau of Land Management (BLM)–Tribal government-to-government dialogue and consultation resulted in identification of a range of alternatives for consideration in the DRECP and EIR/EIS. Two broad categories of alternatives have been identified—those carried forward for detailed analysis in the DRECP and EIR/EIS and those not carried forward for detailed analysis. Both categories are summarized in this chapter.

II.1.1 Alternatives Carried Forward for Detailed Analysis

The alternatives carried forward for detailed analysis include a Preferred Alternative and four other action alternatives—Alternatives 1, 2, 3, and 4. A No Action Alternative is also defined and carried forward for detailed analysis as required by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Each of these alternatives is described in this volume (Volume II) of the DRECP and EIR/EIS. DRECP Volume IV, Environmental Consequences/Effects Analysis, presents the detailed analysis of the environmental effects of each of these alternatives.

At the beginning of the description for each of the action alternatives (Preferred Alternative and Alternatives 1, 2, 3, and 4), a standard package of figures, tables, and charts is presented to orient the reader to the alternative and for equivalent representation and comparison of the alternatives.[1] This package includes Plan-wide descriptions of each alternative and descriptions of the following individual components of each alternative as described in Volume I: BLM Land Use Plan Amendment (LUPA), California Department of Fish and Wildlife (CDFW) Natural Community Conservation Plan (NCCP), and U.S. Fish and Wildlife Service (USFWS) General Conservation Plan (GCP). Proposed incidental take permit applications under the GCP for the California Energy Commission (CEC) and the California State Lands Commission (CSLC) are contained in Appendix M. References in the DRECP to "component" or "components" refers to one or more of these parts of the DRECP—the LUPA, NCCP, GCP, or one of the take authorizations.

[1] Rounding of data was applied to raw values to avoid false precision when presenting calculated values. However, in presenting rounded values there were tradeoffs. Numerical data presented and analyzed in this volume comes from a variety of different sources with varying levels of precision in the data. For presentation purposes, the following general rounding rules were applied: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10. Each value, including the totals and sub-totals, was independently rounded directly from the underlying source data. However, because totals and sub-totals were independently rounded they may not be the sum of the other constituent lower level table values.

For each of the action alternatives, this volume describes in detail the actions to be considered by the four Renewable Energy Action Team (REAT) agencies (BLM, USFWS, CDFW, CEC), CSLC, and potential future partners (e.g., California Public Utilities Commission, counties, private applicants) to approve and implement the DRECP, including the BLM LUPA, CDFW NCCP, and USFWS GCP. The geographic boundaries of each component of the DRECP are generally the same across all of the action alternatives, particularly those linked to ownership boundaries. However, within those categories and boundaries, the size and configuration of renewable energy development areas and reserve design areas within each component vary among the alternatives.

Exhibit II.1-1 schematically depicts the geographic coverage of the plan components common to all the action alternatives. The specifics for each component for each action alternative are described in detail in this volume and analyzed in detail in Volume IV of this document.

Action Alternatives

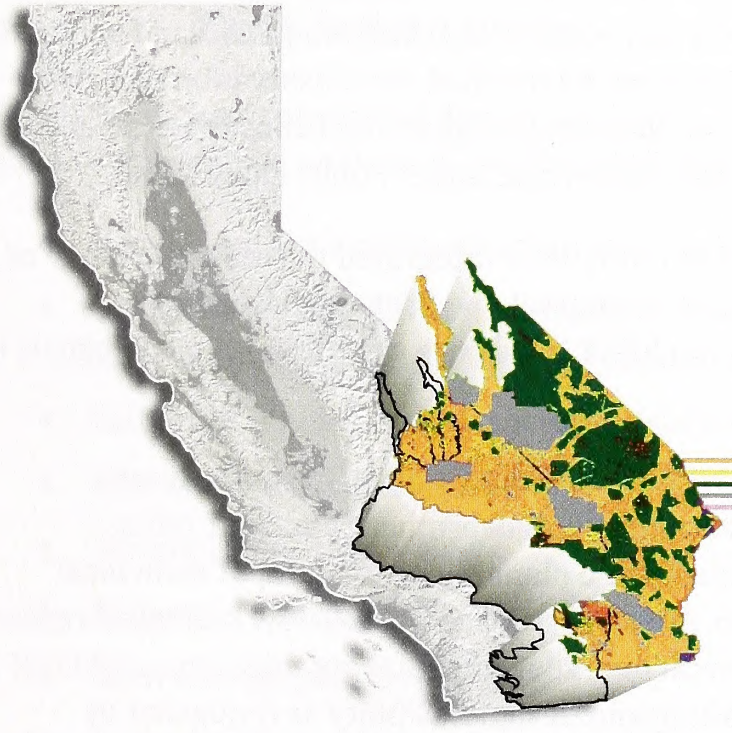
Each of the action alternatives incorporates a biological conservation strategy and Covered Activities elements. Differences among the action alternatives result from variations in the DRECP Plan-Wide Reserve Design Envelope and alternative-specific distributions of renewable energy technologies and configuration of the Development Focus Areas (DFAs).

For example, Alternative 1 includes a DFA configuration that includes only the lowest biological resource conflict areas. The DFA configuration in each of the other action alternatives includes the lowest biological resource conflict areas and additional areas with both high-value renewable energy resources and biological resource values. Each action alternative's DFA configuration reflects a different approach to balancing the goals of minimizing biological resource conflicts and maximizing opportunities to site renewable energy projects in areas of high-value renewable energy resources and to avoid or substantially lessen one or more significant effects of the DRECP. Compensation proposals embedded in the conservation strategies for the alternatives also reflect this process with Alternative 1 emphasizing avoidance, Alternative 2 emphasizing compensation, and the Preferred Alternative and Alternatives 3 and 4 representing variations between avoidance and compensation, all within the context of siting DFAs within areas of high-value renewable energy resources.

For each action alternative, a DRECP Plan-Wide Reserve Design Envelope and conservation strategy were developed to meet the requirements of the federal Endangered Species Act and the Natural Community Conservation Planning Act and to achieve the Step-Down Biological Objectives. The DRECP Plan-Wide Reserve Design Envelope for each action alternative reflects a different approach for achieving the Step-Down Biological Objectives, based on the DFA configuration for each alternative and alternative avoidance and compensation strategies. It is also important to note that each alternative DFA configuration was designed to a large extent around areas of low biological conflict, so the DFA configurations themselves are part of the DRECP Plan-Wide Reserve Design Envelope.

Components of the DRECP

Implementation of the DRECP will involve the Renewable Energy Action Team (REAT) agencies (BLM, CDFW, CEC, USFWS) and other existing and potential partners (CSLC, California Public Utilities Commision, counties, private applicants). Various actions will need to be taken by the REAT agencies and other partners with regard to Covered Activities, some involving overlapping geographic areas and jurisdictions. As described in detail in Volumes I and II, actions addressed in the DRECP include the following: BLM Land Use Amendment (LUPA), CDFW Natural Community Conservation Plan (NCCP), and USFWS General Conservation Plan (GCP), including CEC and CSLC permit applications. This chart geographically depicts the relationships among these actions. For a depiction of the geographic boundaries of the individual actions, please see the individual maps indicated at right.





LLPA Lands

Legislatively & Legally Protected Areas

Total Acreage: 7,567,000

The DRECP does not directly affect the existing management activities of LLPA lands.

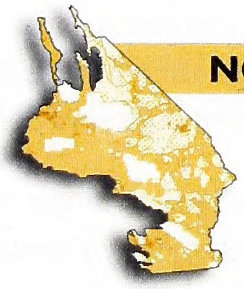


LUPA Lands

Land Use Plan Amendment

Agency: Bureau of Land Management (BLM)

Total Acreage: 9,834,000



NCCP Lands

Natural Communities Conservation Plan

Agency: California Dept. of Fish & Wildlife (CDFW)

Total Acreage: 18,986,000

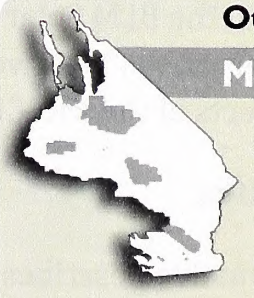


GCP Lands

General Conservation Plan

Agency: US Fish & Wildlife Service (USFWS)

Total Acreage: 5,420,000



Other Lands

Military

Agency: US Department of Defense (DOD)

Total Acreage: 3,019,000

The DRECP does not directly affect the existing management activities of military lands.

Maps on this chart schematically portray the relationships among the DRECP assembly components and are not intended to depict in detail ownerships or overlaps among DRECP assembly components. Refer to detailed maps and tables in the body of the document for more specific information.

Exhibit II.1-1 Components of the DRECP

In addition to alternative DFA and reserve design envelope configurations, each action alternative was designed to reflect a different balance of land use allocations for the full range of land uses on BLM lands. The BLM LUPA for each action alternative incorporates the alternative DFA configurations and is designed to accommodate the DRECP Plan-Wide Reserve Design Envelope and to achieve Step-Down Biological Objectives. However, the LUPA alternatives also reflect a range of potential modifications to existing land use plans and rules that reflect different approaches to balancing the management of all resources on BLM land, such as recreational, cultural, scenic, and mineral resources. In addition, the BLM LUPA for each action alternative takes into consideration the regional, statewide, and national importance of resource values on BLM lands (i.e., in addition to their *Plan-wide* importance), as well as the relatively recent analysis in the Solar Programmatic Environmental Impact Statement (PEIS) of appropriate areas for solar development on BLM lands.

The BLM LUPA also evaluates a range of alternatives that consider the public land within the California Desert Conservation Area administered by the BLM for conservation purposes, and to consider designation of those lands as National Conservation Lands to be included in the National Landscape Conservation System, as directed under Public Law 111-11.

The DFA, reserve design envelope, and BLM LUPA were integrated to create the range of alternatives analyzed in detail in the DRECP. In general, the Preferred Alternative represents the alternative considered by the REAT to achieve the DRECP planning goals in the most balanced way.

Alternatives 1–4 are responsive to input received during scoping, Tribal–Federal Leadership Conferences, BLM–Tribal government-to-government dialogue, other public/stakeholder comments received during the planning process, input from local governments, and scientists and research. Alternative 1 emphasizes low biological resource conflict areas as requested by environmental non-governmental organizations and local communities. Alternative 2 emphasizes siting and design flexibility as requested by industry representatives. Alternatives 3 and 4 are variations on the themes of Alternatives 1 and 2 with additional consideration of ways to represent and consider BLM Variance Lands as identified in the BLM Solar PEIS. All of the action alternatives (the Preferred Alternative and Alternatives 1–4) were designed to avoid or substantially lessen one or more significant effects of the DRECP.

No Action Alternative

The No Action Alternative describes how state and federal renewable energy goals are currently being met and are projected to be met through 2040 in the absence of approval of the DRECP as a LUPA, NCCP, and GCP. Pursuant to CEQA and NEPA, the No Action Alternative is used to compare the relative impacts of not adopting and implementing the DRECP with those of the action alternatives. The No Action Alternative assumes that

renewable energy and transmission development and mitigation for such projects in the Plan Area would occur on a project-by-project basis in a pattern consistent with past and ongoing renewable energy and transmission projects on federal and non-federal lands within the Plan Area. The No Action Alternative would carry forward current planning documents, such as BLM land use plans (including existing amendments to those plans, such as the Solar PEIS). The No Action Alternative assumes a continuation of current management of projected renewable energy development, and it serves as a baseline for comparison of the action alternatives. The No Action Alternative includes conservation designations and protections found in each of the underlying land use plan/resource management plans. Under the No Action alternative, there would be no comprehensive LUPA, GCP, or NCCP for the California deserts.

II.1.2 Alternatives Not Carried Forward for Detailed Analysis

Eight alternatives considered during the EIR/EIS planning process have not been carried forward for detailed analysis in the Draft EIR/EIS. These include the following:

- Distributed Generation Alternative
- Center for Energy Efficiency and Renewable Technologies (CEERT) and Large-Scale Solar Association (LSA) Proposed Solar Areas Alternative
- California Wind Energy Association (CalWEA) Proposed Wind Areas Alternative
- BLM-Only Lands Alternative
- Private Lands Alternative
- Dispersed Development Alternative
- Southeast Emphasis Alternative
- Avian Avoidance Alternative

These alternatives are described in Chapter II.8 of this volume along with the reasons why they were not carried forward for detailed analysis.

INTENTIONALLY LEFT BLANK

II.2 NO ACTION ALTERNATIVE

II.2.1 Interagency Description of the No Action Alternative

The No Action Alternative describes how state and federal renewable energy goals are currently being met. The No Action Alternative is utilized to compare the relative impacts of not approving the Desert Renewable Energy Conservation Plan (DRECP or Plan) with all other action alternatives and thus assumes that renewable energy and transmission development and mitigation for such projects would occur on an ad hoc basis in a pattern consistent with past and ongoing renewable energy and transmission projects on federal and nonfederal lands within the planning area. The No Action Alternative would also carry forward current planning documents, such as Bureau of Land Management (BLM) land use plans (including existing amendments to those plans, such as the Solar Programmatic Environmental Impact Statement [PEIS]). The No Action Alternative assumes a continuation of current renewable energy development and mitigation, and current BLM land management, and serves as a baseline for comparison of the action alternatives.

II.2.1.1 Overview of the No Action Alternative

The following provides a Plan-wide overview of the No Action Alternative, which is further detailed in the subsequent sections. Under the No Action Alternative, the BLM conservation strategy for the California desert region would continue to apply as reflected in the current and existing land use plan/resource management plans (RMPs). Permitting of renewable energy and transmission development would occur on a project-by-project basis. Under the No Action Alternative, renewable energy and transmission development could generally occur anywhere in the planning area where suitable solar insolation, wind speed, or geothermal resources exist and where such development is not prohibited or otherwise inconsistent with existing land use plan decisions, subject to applicable National Environmental Policy Act (NEPA) analysis, and assumes that renewable energy development and transmission would generally be sited in the same regions as approved and current projects, subject to existing laws and regulations. A specific land use plan amendment would likely be necessary to site a renewable energy project under some land use plans. Further, under existing plans, a particular site may be denied. The Plan-wide description of the No Action Alternative (Section II.2.1) characterizes existing and potential conservation in the planning area and existing and potential renewable energy and transmission development for the entire 22.6-million-acre DRECP planning area. This Plan-wide description is analogous to the Plan-wide description provided for all action alternatives, as described in Chapters II.3 through II.7.

Under the No Action Alternative, the BLM would not amend its existing land use plans to address a strategic approach to renewable energy resource development. The No Action Alternative, as described in Section II.2.2 for BLM-administered lands, brings forward the

existing management as described in the California Desert Conservation Area (CDCA) Plan, Bishop RMP, and Caliente RMP, including applicable amendments (including the land use plan amendments from the Solar PEIS Record of Decision [ROD]), as they apply to the BLM's decision area (Plan Area and CDCA outside of the Plan Area). Only land use plan level decisions described in these plans are presented and summarized. In the absence of specific resource decisions, management has occurred based on federal law, regulation, and BLM policy and guidance. Specific decisions in the CDCA Plan related to energy development have been limited to adoption of approximately 20 joint-use transportation and energy planning corridors for the transmission of large-scale energy loads to and through the CDCA, and classification of geothermal areas as either competitive or non-competitive. Current BLM Land Use Plans are available online at: http://www.blm.gov/ca/st/en/prog/planning.html.

Under the No Action Alternative, the California Department of Fish and Wildlife (CDFW) would approve a Natural Community Conservation Plan (NCCP) to provide for the conservation of Covered Species and to streamline future permitting of incidental take of California Endangered Species Act (CESA) listed species resulting from renewable energy projects and associated transmission in the California deserts. CESA permitting would occur on an ad hoc, project-by-project basis, and any mitigation required to offset the effects on state-listed species would not be based on a comprehensive, desert-wide conservation strategy, as proposed under the DRECP; rather, it would be based on the conservation requirements of the existing plans. In addition, under the No Action Alternative, no incidental take permitting of fully protected species would be allowed. As described in Section II.2.3, the Plan-wide No Action Alternative (Section II.2.1) serves as the description of the No Action Alternative for the NCCP.

Under the No Action Alternative, the U.S. Fish and Wildlife Service (USFWS) would not approve a General Conservation Plan (GCP) to streamline future permitting of incidental take of federal Endangered Species Act (ESA) listed species on nonfederal lands resulting from renewable energy projects and associated transmission in the California deserts. In the absence of a federal nexus, project proponents desiring incidental take authorization from USFWS would need to develop Habitat Conservation Plans (HCPs) for their individual permit applications. Because these HCPs would be developed on a project-by-project basis, any mitigation required to offset the effects of incidental take would not be based on a comprehensive, desert-wide conservation strategy, as proposed under the DRECP. Similarly, under the No Action Alternative, the USFWS would not propose to issue incidental take permits to the California Energy Commission (CEC) or California State Lands Commission (CSLC) under the GCP. In the absence of a federal nexus, project proponents needing CEC licenses or CSLC leases for renewable energy projects would need to seek incidental take authorization from USFWS through development of HCPs for their individual incidental take permit applications. Because CEC license applications and CSLC

lease applications would be requested on a project-by-project basis, any mitigation required to offset the effects of incidental take would not specifically be based on a comprehensive, desert-wide conservation strategy, as proposed under the DRECP.

Table II.2-1 summarizes the No Action Alternative by available development areas, existing protected areas, existing BLM land use plan conservation designations, and other lands. Under the No Action Alternative, available development areas include the portion of the planning area where renewable energy development (i.e., solar, wind, or geothermal technologies) is not prohibited, that meets BLM policy considerations, where the particular resource criteria is met, where a further land use plan amendment may be approved, and where past and current renewable energy projects are being sited, which totals approximately 6,285,972 acres. The No Action Alternative map is provided in Figure II.2-1.

Table II.2-1
No Action Alternative

Alternative Component	Acreage
Available Development Areas Under No Action[1]	**6,286,000**
Existing Protected Areas	**7,662,000**
Legislatively and Legally Protected Areas (LLPAs)	7,567,000
Military Expansion Mitigation Lands (MEMLs)	96,000
Existing BLM Land Use Plan Conservation Designations[1,2]	**2,966,000**
Urban Areas, Other Lands, and Undesignated Areas	**7,064,000**
Impervious and Urban Built-up Land	515,000
Military	3,019,000
BLM Open Off-Highway Vehicle (OHV) Areas	264,000
Imperial Sand Dunes – including the BLM Open OHV Area	132,000
Johnson Valley OHV Shared Use Area	56,000
Tribal Lands	129,000
Undesignated Areas	2,9749,000
Planning Area Total	**22,585,000**

Notes:

Plan-wide alternative summary includes both federal lands and nonfederal lands. The summary specific to BLM-administered lands is provided in Section II.2.2, and the summary specific to nonfederal lands is provided in Section II.2.4. The BLM land use plan conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. Impervious and urban built-up lands occur within available development areas and existing BLM land use plan conservation designations were not explicitly included in the urban category reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[1] Available development areas under No Action includes the portion of the planning area where renewable energy development (i.e., solar, wind, or geothermal technologies) is not prohibited and where past and current renewable energy projects are being sited. Not all areas are available for all renewable energy technologies. The BLM Solar PEIS identified approximately 737,000 acres of Solar Energy Zones (SEZs) and Variance Lands in the planning area, of which

approximately 438,000 acres occur in regions where past and current renewable energy projects are being sited (BLM and DOE 2012). The Available Development Areas acreage includes 1,393,000 acres designated as Areas of Critical Environmental Concern (ACECs) that do not prohibit renewable energy development. These acres are also included in the existing BLM land use plan conservation designations.

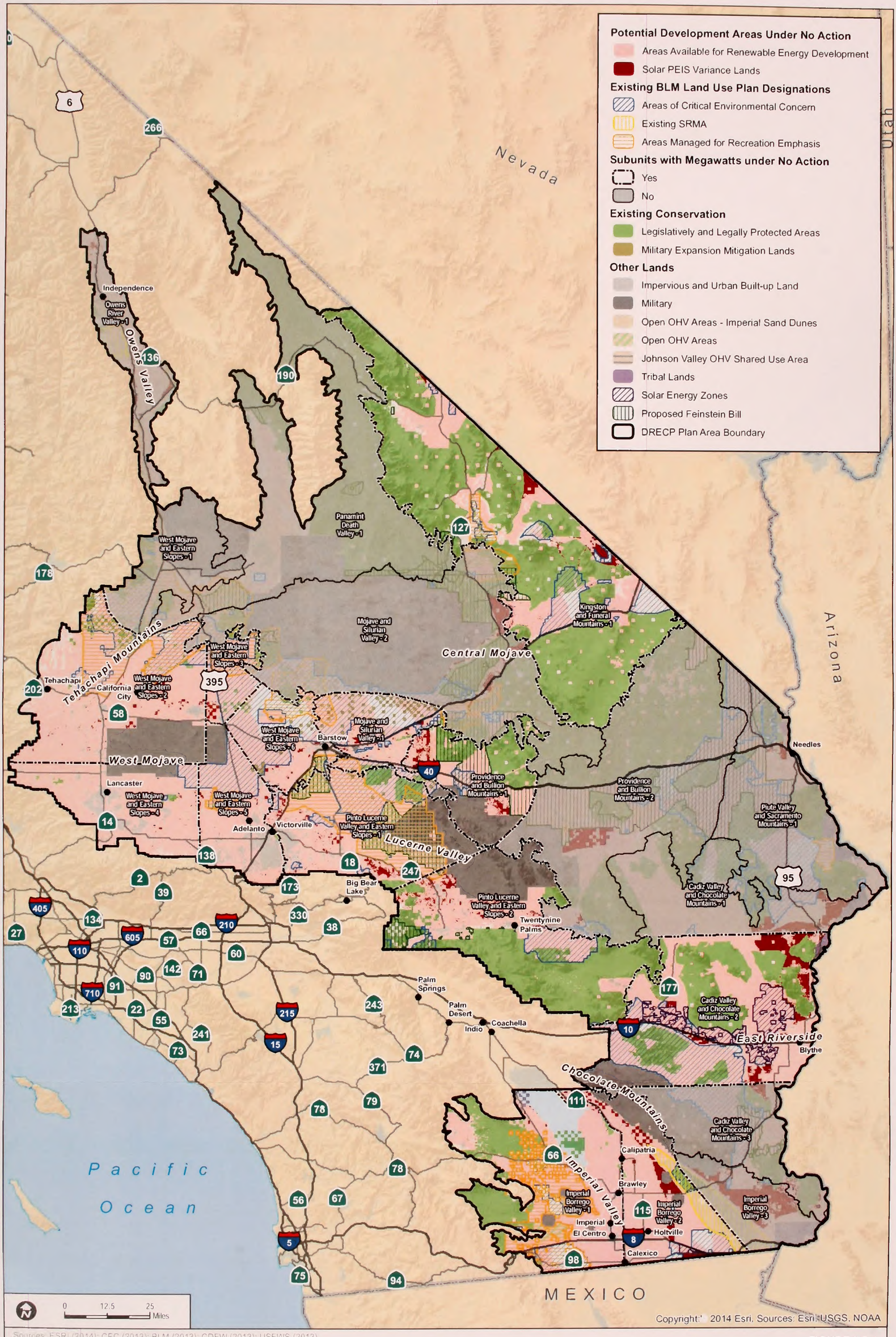
[2] Existing BLM land use plan conservation designations include existing ACECs. Overlaps of existing BLM land use plan conservation designations with existing protected areas or open OHV areas are reported as existing protected areas or open OHV areas.

II.2.1.2 Conservation Under the No Action Alternative

Conservation in the planning area under the No Action Alternative includes the following: conservation provided by existing protected areas, conservation provided by existing BLM land use plan conservation designations, and existing and planned conservation resulting from project-specific mitigation used to avoid or offset the impacts of development of renewable energy and transmission development in the planning area.

As part of the DRECP planning process described in Volume I, Chapter I.3, existing protected areas (e.g., National Parks, Wilderness Areas) were identified as an initial step in the reserve design process for the DRECP (Section I.3.4.4). These Legislatively and Legally Protected Areas (LLPAs) and Military Expansion Mitigation Lands (MEMLs) are considered existing protected areas under the No Action Alternative. Existing BLM National Conservation Lands (as described in Section II.2.2; also referred to as National Landscape Conservation System [NLCS] lands) are included in these existing protected areas.

Existing BLM land use plans and subsequent amendments have designated Areas of Critical Environmental Concern (ACECs) in the planning area that provide resource conservation by specifying and managing uses within each ACEC unit. The BLM land use planning process is described in Section I.3.1. The existing management of the ACECs on BLM-administered lands under the No Action Alternative is described in Section II.2.2. Desert Wildlife Management Areas (DWMAs) are included as ACECs here. Existing BLM land use plans have other designations, including wildlife allocations, Special Recreation Management Areas (SRMAs), Extensive Recreation Management Areas (ERMAs), Cultural Districts, eligible Wild and Scenic Rivers, grazing allotments, and lands with wilderness characteristics that, combined with the BLM multiple use class overlays, determine BLM land management decisions and provide for resource management in these areas; however, these designations are not specifically included as biological conservation under the No Action Alternative.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.2-1

Alternative No Action

INTENTIONALLY LEFT BLANK

Project-specific mitigation used to offset impacts from renewable energy and transmission development projects would also provide resource conservation in the planning area under the No Action Alternative. The amount, location, and resources conserved by project-specific mitigation for projects developed under the No Action Alternative would be dependent on the specifics of these projects and the requirements of the federal, state, and/or local jurisdictions permitting the projects; therefore, this portion of conservation under the No Action Alternative has not been quantified because it's not known. However, the amount, location, and resources are generally more extensive than in the project development area and may include resources within the original project development area or remotely located.

Table II.2-2a summarizes conservation by county under the No Action Alternative. Table II.2-2b summarizes conservation by land ownership under the No Action Alternative. Table II.2-2c summarizes conservation by ecoregion subarea under the No Action Alternative.

Table II.2-2a
Conservation Under the No Action Alternative by County

County	Existing Protected Areas[1] (acres)	Existing BLM Land Use Plan Conservation Designation[2] (acres)	Total Acreage
Imperial County	274,000	312,000	586,000
Inyo County	1,921,000	29,000	1,950,000
Kern County	135,000	274,000	409,000
Los Angeles County	6,000	25,000	31,000
Riverside County	982,000	260,000	1,242,000
San Bernardino County	4,145,000	2,065,000	6,210,000
San Diego County	199,000	-	199,000
Total	**7,662,000**	**2,966,000**	**10,628,000**

Notes: This summary includes both federal lands and nonfederal lands. The summary specific to BLM-administered lands is provided in Section II.2.2, and the summary specific to nonfederal lands is provided in Section II.2.4. The BLM land use plan conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. Project-by-project mitigation generated from renewable energy and transmission development is not reflected in this tabular summary. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

1 Existing protected areas includes LLPAs and MEMLs.

2 Existing BLM land use plan conservation designations include existing ACECs and DWMAs. Overlaps of existing BLM land use plan conservation designations with existing protected areas are reported as existing protected areas.

Table II.2-2b
Conservation Under the No Action Alternative by Ownership Class

Ownership Class	Existing Protected Areas[1] (acres)	Existing BLM Land Use Plan Conservation Designation[2] (acres)	Total Acreage
Federal Lands			
BLM-administered land	3,279,000	2,395,000	5,674,000
Other federal land	3,949,000	9,000	3,959,000
Nonfederal Lands			
Private land	31,000	501,000	532,000
State and local public land	**403,000**	**61,000**	464,000
Total	**7,662,000**	**2,966,000**	**10,628,000**

Notes: This summary includes both federal lands and nonfederal lands. The summary specific to BLM-administered lands is provided in Section II.2.2, and the summary specific to nonfederal lands is provided in Section II.2.4. The BLM land use plan conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. Project-by-project mitigation generated from renewable energy and transmission development is not reflected in this tabular summary. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

[1] Existing protected areas includes LLPAs and MEMLs.

[2] Existing BLM land use plan conservation designations include existing ACECs. Overlaps of existing BLM land use plan conservation designations with existing protected areas are reported as existing protected areas. Although non-BLM lands may be included within BLM land use plan conservation designations, BLM land use plan decisions only direct management on BLM-managed lands and are not binding for other land owners.

Table II.2-2c
Conservation under the No Action Alternative by Ecoregion Subarea

Ecoregion Subarea	Existing Protected Areas[1] (acres)	Existing BLM Land Use Plan Conservation Designation[2] (acres)	Total Acreage
Cadiz Valley and Chocolate Mountains	842,000	497,000	1,339,000
Imperial Borrego Valley	355,000	155,000	509,000
Kingston and Funeral Mountains	1,767,000	151,000	1,918,000
Mojave and Silurian Valley	786,000	421,000	1,208,000
Owens River Valley	32,000	900	33,000
Panamint Death Valley	1,253,000	8,000	1,260,000
Pinto Lucerne Valley and Eastern Slopes	739,000	259,000	998,000
Piute Valley and Sacramento Mountains	423,000	412,000	835,000
Providence and Bullion Mountains	1,305,000	288,000	1,592,000
West Mojave and Eastern Slopes	162,000	774,000	936,000
Total	**7,662,000**	**2,966,000**	**10,628,000**

Notes: This summary includes both federal lands and nonfederal lands. The summary specific to BLM-administered lands is provided in Section II.2.2, and the summary specific to nonfederal lands is provided in Section II.2.4. The BLM land use plan conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. Project-by-

project mitigation generated from renewable energy and transmission development is not reflected in this tabular summary. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[1] Existing protected areas includes LLPAs and MEMLs.

[2] Existing BLM land use plan conservation designations include existing ACECs. Overlaps of existing BLM land use plan conservation designations with existing protected areas are reported as existing protected areas.

Under the No Action Alternative, numerous resource management planning documents have been prepared addressing portions of the planning area. These resource management documents are summarized in Table II.2-3. Several of these documents address management of lands considered existing protected areas, like national parks and state parks. The BLM documents relate to BLM land use planning and management on BLM-administered lands, which is more specifically described in Section II.2.2. The species-specific USFWS Recovery Plans specify recovery actions for federally listed species relevant to the planning area. Additionally, several documents listed describe resource management planning on military lands.

II.2.1.3 Renewable Energy and Transmission Development Under the No Action Alternative

This section provides a description of the anticipated distribution, magnitude, and scope of activities associated with the construction and operation of renewable energy generation under the No Action Alternative. Because development is currently allowed within the planning area, the No Action Alternative assumes that the state can achieve its renewable energy goals in support of greenhouse gas reduction targets. It further assumes that the contribution of the Plan Area to the state goals under the No Action Alternative would be similar to the Preferred Alternative and other alternatives. The main difference between the No Action Alternative and the Preferred Alternative and other alternatives—as analyzed in Volume IV, Environmental Consequences/Effects Analysis—is the No Action Alternative lacks an integrated, interagency conservation strategy for Covered Species and natural communities throughout the California deserts that addresses a strategic approach to renewable energy development.

This section is subdivided by technology: solar, wind, geothermal, and transmission. The renewable energy development activities that would take place under the No Action Alternative are identical to development activities on the list of Covered Activities included in the Preferred Alternative, a detailed description of which is provided in Section II.3.1.4, although the location of those activities would vary from what would occur under the action alternatives.

Table II.2-3
No Action Alternative – Existing Resource Management Planning Documents

Plan Name	Approval Year	Responsible Agency	Description of Plan
Anza-Borrego Desert State Park General Plan and Environmental Impact Report (EIR)	2005	California State Parks	The objective of this general plan is to provide management guidelines that will allow for visitor use while protecting the park resources.
BLM California Desert Conservation Area (CDCA) Plan, as amended (including Solar PEIS land use plan amendments)	1980	Bureau of Land Management	This document serves as a land-use guide for management of BLM lands within the CDCA.
CDCA Amendment: BLM Northern and Eastern Colorado Desert Coordinated Management Plan (NECO)	2002	Bureau of Land Management	This document is a landscape-scale, multi-agency planning effort that provides protection and conserves natural resources while balancing anthropogenic uses with the California portion of the Sonoran Desert ecosystem.
CDCA Amendment: BLM Northern and Eastern Mojave Desert Management Plan (NEMO)	2002	Bureau of Land Management	This document addresses threatened and endangered species conservation and recovery and adoption of public land health standards, and evaluation of segments for eligibility in the National Wild and Scenic Rivers System.
CDCA Amendment: BLM West Mojave Plan (WEMO)	2006	Bureau of Land Management	This habitat conservation plan and federal land use plan amendment describes a strategy to conserve and protect desert tortoise (*Gopherus agassizii*), Mohave ground squirrel (*Xerospermophilus mohavensis*), and other sensitive plants, animals, and natural communities.
CDCA Amendment: BLM Western Colorado Desert Routes of Travel Designations (WECO)	2002	Bureau of Land Management	This document specifies recreational use areas and designated routes in the western Colorado/Sonoran Desert portion of Imperial County, California

Table II.2-3
No Action Alternative – Existing Resource Management Planning Documents

Plan Name	Approval Year	Responsible Agency	Description of Plan
CDCA Amendment: BLM Imperial Sand Dunes Recreation Area Management Plan (ISD RAMP)	2013	Bureau of Land Management	This document provides guidance for the conservation and management of public lands in and adjacent to the Imperial Sand Dunes Recreation Area.
CDCA Amendment: BLM Western Colorado Desert Routes of Travel Designations (WECO)	2002	Bureau of Land Management	This document specifies recreational use areas and designated routes in the western Colorado/Sonoran Desert portion of Imperial County, California.
BLM: Bishop RMP	1993	Bureau of Land Management	This document serves as a land-use guide for management of BLM lands within the Bishop Field Office.
BLM: Caliente RMP (Bakersfield Field Office)	1997	Bureau of Land Management	This document serves as a land-use guide for management of BLM lands within the Bakersfield Field Office.
BLM ACEC and joint Sikes Act Management Plans	Multiple	Bureau of Land Management / CDFW	Management plans prepared for individual ACEC units.
China Lake Naval Air Weapons Station EIS	2004	Department of the Navy, U.S. Department of Defense	This document analyses the environmental consequences of an increase in the tempo of military and operational activities at China Lake Naval Air Weapons Station.
Death Valley General Management Plan	2002	National Park Service	This plan outlines the Death Valley National Park's overall management strategy for a 10- to 15-year period.
Edwards Air Force Base Integrated Natural Resources Management Plan (INRMP)	2008	U.S. Department of Defense	The goal of this INRMP is to identify regional issues of importance so as to provide a more efficient management of natural resources on a landscape basis while sustaining military readiness.

Table II.2-3
No Action Alternative – Existing Resource Management Planning Documents

Plan Name	Approval Year	Responsible Agency	Description of Plan
Flat-tailed Horned Lizard Rangewide Management Strategy (also includes a CDCA Amendment)	2003	Flat-tailed Horned Lizard Interagency Coordinating Committee	This document provides guidance for the conservation and management of sufficient habitat to maintain extant populations of flat-tailed horned lizards (*Phrynosoma mcallii*) in each of five management areas in perpetuity.
Joshua Tree National Park General Management Plan EIS	1995	National Park Service	This document includes a general management plan, development concept plans, and an EIS for Joshua Tree National Park.
Lower Colorado River Multi-Species Conservation Program (LCR MSCP)	2004	USFWS; LCR MSCP Steering Committee	The goal of this document is to conserve habitat and work toward the recovery of threatened and endangered species, reduce the likelihood of additional species being listed, to accommodate present and future water and power development and provide the basis for incidental take authorizations.
Lower Colorado River Wildlife Refuges Management Plan (1994–2014)	1994	USFWS; U.S. Bureau of Reclamation	This document is primarily concerned with the management of the four national wildlife refuges along the lower Colorado River including Havasu, Bill Williams, Cibola, and Imperial national wildlife refuges.
Owens Valley Land Management Plan	2010	Los Angeles Department of Water and Power	The Owens Valley Land Management Plan provides management direction for resources on all City of Los Angeles-owned lands in Inyo County, California, excluding the Lower Owens River Project area.

Table II.2-3
No Action Alternative – Existing Resource Management Planning Documents

Plan Name	Approval Year	Responsible Agency	Description of Plan
Species Recovery Plans (USFWS)	Multiple	USFWS	These documents guide the species recovery process and measure progress towards recovery of a species.
Supplemental Final EIS, National Training Center, Fort Irwin	2006	U.S. Department of the Army	This document addresses the potential environmental impacts associated with the addition of maneuver training land at Fort Irwin.
Twentynine Palms Marine Corps Air Ground Combat Center INRMP	1993	United States Marine Corps	The purpose of this INRMP was to provide information and guidance that would enhance the Natural Resources Program of the Marine Corps Air-Ground Combat Center, Twentynine Palms.

Notes: Only major amendments to the BLM CDCA are included in this table.

In the No Action Alternative, renewable energy-related activities are assumed to be feasible on open, non-military lands that are not currently protected or where such development is not prohibited; these areas are disbursed throughout the Plan Area (Figure II.2-1). However, the distribution of different generation technologies varies depending on underlying factors that affect each technology. Therefore, for the purpose of analysis, the future technology mix and spatial distribution was assumed to be similar to current development patterns at the ecoregion scale. To approximate future distribution patterns, the distribution of existing projects that are either operational, under construction, or approved or under environmental review was used as a proxy for estimating the spatial distribution of renewable energy development under the No Action Alternative. It should be noted that, as a consequence of projecting future development from the distribution of existing projects, some ecoregions were not assigned generation impacts.

Tables II.2-4a and II.2-4b summarize the potential acreage of areas available for renewable energy and transmission development under the No Action Alternative by county and ownership. Most of this acreage is in Imperial and San Bernardino counties.

Most of the areas available for renewable energy development are located on private lands, where solar and wind development is the most common (on a per-acre basis) technology class. For the "federal (non-BLM)" land and "nonfederal" categories of land, geothermal technology is the most prevalent technology type. On BLM and CSLC land, wind energy development is the most common technology type.

Most of the areas available for renewable energy development are located in the Imperial Borrego Valley and West Mojave and Eastern Slopes ecoregional subareas. Solar is the most common technology class in the Imperial Borrego Valley subarea, and wind is the most common technology class in the West Mojave and Eastern Slopes subarea.

Table II.2-4a
Areas Available for Potential Development under the No Action Alternative by Technology Type and by County

Areas Available by Renewable Energy Technology by County	Acreage
Imperial County	*1,065,000*
Geothermal	68,000
Geothermal and wind	2,000
Solar	601,000
Solar and geothermal	266,000
Solar and wind	72,000
Solar, geothermal, and wind	12,000
Wind	45,000

Table II.2-4a
Areas Available for Potential Development under the No Action Alternative by Technology Type and by County

Areas Available by Renewable Energy Technology by County	Acreage
Inyo County	*250,000*
Solar	99,000
Solar and wind	82,000
Wind	69,000
Kern County	*929,000*
Solar	12,000
Solar and wind	435,000
Wind	482,000
Los Angeles County	*528,000*
Solar	900
Solar and wind	368,000
Wind	159,000
Riverside County	*995,000*
Solar	183,000
Solar and wind	444,000
Wind	367,000
San Bernardino County	*2,462,000*
Geothermal	0
Geothermal and wind	1,000
Solar	104,000
Solar and wind	857,000
Solar, geothermal, and wind	20
Wind	1,499,000
San Diego County	*57,000*
Solar	46,000
Solar and wind	9,000
Wind	2,000
Total	**6,286,000**

Notes: Excludes existing protected areas, military, tribal, and subareas or subunits where megawatts were not assigned under the No Action Alternative. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.2-4b
Areas Available for Potential Development under the No Action Alternative by Ownership

Areas Available by Ownership Class	Acreage
Federal Lands	
BLM-administered land	2,817,000
Other federal land	37,000
Nonfederal Lands	
Private land	3,243,843
State and local public land	188,469
Total	**6,285,972**

Notes: Excludes existing protected areas, military, tribal, and subareas or subunits where megawatts were not assigned under the No Action Alternative. All types of renewable energy development are available to be developed in all of the acreage reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

The following sections describe the anticipated distribution of generation that could occur under the No Action Alternative, and estimate the total project area and the area of permanent disturbance for each technology, a summary of which is provided in Table II.2-5.

Table II.2-5
Summary of Anticipated Long-Term Disturbance and Project Area Acreage for All Renewable Generation Technologies under No Action

Renewable Generation Technology	Estimated Long-Term Disturbance (Acres)	Total Project Area (Acres)
Solar	103,000	103,000
Wind	12,000	218,000
Geothermal	2,000	2,000
Distributed generation	5,000	5,000
Total	**122,000**	**329,000**

II.2.1.3.1 Solar Energy Generation

This section provides an estimate of the area of impacts for activities associated with solar projects in the absence of the DRECP. Construction and operational activities are identical to those described for the Preferred Alternative in Section II.3.1.4.1 and listed in Table II.3-21.

As with other alternatives, the No Action Alternative was analyzed at a programmatic level. Extensive detailed analysis of effects that are project-specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the acreage that would be affected by activities within different ecoregion subareas of the Plan Area (Table II.2-6). It was assumed that solar development would occur within the subset of ecoregions identified in Figure II.2-1.

When estimating the impacts of solar projects it was assumed that the construction of projects would result in the loss of all habitat within the boundary of the project footprint. Two reasons are given for this: (1) Unlike other technologies, solar projects are generally fenced to exclude wildlife and result in modification to natural processes for the life of the project; and (2) although some vegetation may be preserved at some project locations, this is not universal and conditions of service often lead to the removal of vegetation to reduce fire risk. Further, the extensive removal, modification, and grading within the project boundary, even if vegetation is not completely removed, may lead to edge effects that effectively modify the remaining vegetation communities. Therefore, the acreage requirements for roads, operation and maintenance facilities, and switchyards required for each facility are included in the overall estimated boundary of the solar project. Similarly, short-term impacts, such as construction and laydown yards, were assumed to be within the final boundary of the project and therefore subsumed within the boundary estimate. Table II.2-6 summarizes the long-term impacts for solar technologies and provides the following information by ecoregions:

- Total Long-Term Ground Disturbance – Estimated total acreage affected by solar development activities such as vegetation clearance, grading, and construction. This is effectively a summation of all potential solar generation facility footprints. Operations and maintenance buildings, switchyards, road construction, and all ancillary facilities were assumed to be within the boundary of the Plan Area and result in long-term disturbance to the entire project site. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered long term for the purpose of analysis. However, all temporarily impacted areas would be subject to restoration plans, therefore, considering them long-term disturbance is a conservative approach.
- Total Project Area – An estimate of the total area occupied by a given project. For area-intensive technologies like solar generation, the total project area is identical to the total long-term ground disturbance.

Table II.2-6
Distribution of Long-Term Disturbance and Project Area Acreages Associated with Solar and Distributed Generation Across DRECP Ecoregion Subareas Under the No Action Alternative

Ecoregion Subarea	Long-Term Disturbance and Project Area		
	Plan-Wide	*BLM*	*Non-BLM*
Cadiz Valley and Chocolate Mountains	40,000	29,000	11,000
Imperial Borrego Valley	20,000	5,000	15,000
Kingston and Funeral Mountains	16,000	13,000	3,000
Mojave and Silurian Valley	—	—	—
Owens River Valley	—	—	—
Panamint Death Valley	—	—	—
Pinto Lucerne Valley and Eastern Slopes	1,000	500	500
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	13,000	10,000	3,000
West Mojave and Eastern Slopes	18,000	4,000	14,000
Total	**108,000**	**61,500**	**46,500**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.2.1.3.2 Wind Energy Generation

This section provides an estimate of the size of impacts for potential activities associated with wind projects in the absence of the DRECP. Construction and operational activities are identical to those described for the Preferred Alternative in Section II.3.1.4.2 and listed in Table II.3-23.

As with other alternatives, the No Action Alternative was analyzed at a programmatic level. The magnitudes of impacts are described in terms of the acreage that would be affected by activities within different ecoregion subareas of the Plan Area (Table II.2-7). It was assumed that wind development would occur within the subset of regions identified in Figure II.2-1.

Extensive detailed analysis of effects that are project-specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the acreage that would be affected by activities within different ecoregion subareas of the Plan Area. Wind projects result in relatively diffuse impacts spread across a wide area. Turbines are widely spaced and connected by permanent access roads and transmission infrastructure, with centralized maintenance facilities and switchyards. Unlike solar, all the land within the boundary of a wind project was not assumed to be permanently disturbed

by project activities. For the purpose of analysis, estimates of disturbed areas were the sum of the estimated acreage required for turbine pads, roads, ancillary facilities, and supporting infrastructure. Short-term construction activities, such as laydown yards, were assumed to result in long-term disturbance within the project boundary. In addition to estimates of ground disturbance, the area likely to be impacted by the operation of the turbine rotors (airspace) was also estimated. For analysis purposes, turbines were grouped into conceptual projects of up to 200 megawatts (MWs) to enable an estimation of impacts from ancillary facilities, roads, turbines etc. Table II.2-7 summarizes the long-term impacts assumed for wind technologies, and provides the following information by ecoregion subarea:

- Total Project Area – An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area (e.g., wind energy generation), the long-term impacts are distributed over a larger area.
- Estimated Long-Term Ground Disturbance – Estimated total acreage affected by wind energy activities described above. This is effectively a summation of all potential wind generation facility footprints, including individual turbine pad, operations and maintenance building, switchyard, and road construction impacts. This estimate also includes the additional impacts that would occur as a consequence of construction activities including construction areas, laydown yards, and storage facilities. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered long term for the purpose of analysis. However, all temporarily impacted areas would be subject to restoration plans; therefore, considering them long-term disturbance is a conservative approach.
- Turbine Rotor Swept Area – An estimate of the total aerial acreage affected by the rotation of turbine blades while a wind facility is operating.

Table II.2-7
Potential Distribution of Long-Term Disturbance, Rotor Swept Area, and Project Area Acreages Associated with Wind Generation Across DRECP Ecoregion Subareas Under the No Action Alternative

Ecoregion Subarea	Project Area			Long-Term Disturbance			Rotor Swept Area		
	Plan-Wide	*BLM*	*Non-BLM*	*Plan-Wide*	*BLM*	*Non-BLM*	*Plan-wide*	*BLM*	*Non-BLM*
Cadiz Valley and Chocolate Mountains	—	—	—	—	—	—	—	—	—
Imperial Borrego Valley	27,000	—	27,000	2,000	—	2,000	800	—	800

Table II.2-7
Potential Distribution of Long-Term Disturbance, Rotor Swept Area, and Project Area Acreages Associated with Wind Generation Across DRECP Ecoregion Subareas Under the No Action Alternative

Ecoregion Subarea	Project Area			Long-Term Disturbance			Rotor Swept Area		
	Plan-Wide	*BLM*	*Non-BLM*	*Plan-Wide*	*BLM*	*Non-BLM*	*Plan-wide*	*BLM*	*Non-BLM*
Kingston and Funeral Mountains	—	—	—	—	—	—	—	—	—
Mojave and Silurian Valley	—	—	—	—	—	—	—	—	—
Owens River Valley	—	—	—	—	—	—	—	—	—
Panamint Death Valley	—	—	—	—	—	—	—	—	—
Pinto Lucerne Valley and Eastern Slopes	5,000	3,000	2,000	300	200	100	200	100	100
Piute Valley, Sacramento Mountains	—	—	—	—	—	—	—	—	—
Providence and Bullion Mountains	—	—	—	—	—	—	—	—	—
West Mojave and Eastern Slopes	175,000	39,000	136,000	10,000	2,000	8,000	5,000	1,000	4,000
Total	**207,000**	**42,000**	**165,000**	**12,300**	**2,200**	**10,100**	**6,000**	**1,100**	**4,900**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.2.1.3.3 Geothermal Energy Generation

This section provides an estimate of the size of impacts for potential activities associated with geothermal projects under the No Action Alternative by the DRECP. Construction and operational activities are identical to those described for the Preferred Alternative in Section II.3.1.4.3 and listed in Table II.3-25.

The area available to geothermal development was limited to portions of areas in the Imperial Borrego Valley and part of the Owens River Valley ecoregion subareas, where geothermal resources are concentrated. Geothermal projects are more limited in size (in the Plan Area) than other renewable energy projects. Recent projects vary from about 50 MW to 160 MW in size. For analysis under the No Action Alternative, potential geothermal projects were assumed be typically 50 MW in size. Extensive detailed analysis of potential effects that are project-specific (i.e., geographically site-specific) is infeasible.

Consequently, the magnitudes of impacts are described in terms of the estimated acreage that would be affected by activities within different ecoregion subareas of the Plan Area. It was assumed that geothermal development would occur within the subset of regions identified in Figure II.2-1.

- Geothermal projects result in extensive impacts associated with the power block and ancillary facilities, with more dispersed impacts resulting from the well fields. Wellheads that inject and collect heat transfer fluids are widely spaced and connected by permanent access roads and pipelines to the centrally located power block and steam turbine facilities. All land within the boundary of a geothermal project was assumed permanently disturbed by project activities. Estimates of disturbed acreage include the acreage required for wellhead pads, roads, ancillary facilities, and supporting infrastructure, and also includes the land fragmented by the roads, pipelines and well pads in the well-field, which was assumed to retain no conservation value. Short-term construction activities, such as laydown yards, were assumed to result in permanent disturbance within the project boundary, and are also included in the estimate of permanently disturbed acreage. Table II.2-8 summarizes the long-term impacts for geothermal technologies and provides the following information by ecoregion subarea: Estimated Long-Term Ground Disturbance – Estimated total acreage affected by geothermal development activities such as vegetation clearance, grading, and construction. This is effectively a summation of all potential geothermal energy generation facility footprints, including operations and maintenance building, switchyard, and road construction impacts, plus the additional impacts that occur as a consequence of construction activities, , and the fragmented land within the well-field. Due to the difficulty of restoration in an arid environment, all activities that result in vegetation removal or disturbance were considered long term for the purpose of analysis. However, all temporarily impacted areas would be subject to Restoration Plans, therefore, considering them permanent disturbance is a conservative approach.
- Total Project Area – An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area (e.g., geothermal energy generation), the long-term impacts are distributed over a larger area.

Table II.2-8
Potential Distribution of Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation Across DRECP Ecoregion Subareas Under the No Action Alternative

Ecoregion Subarea	Long-Term Disturbance and Project Area		
	Plan-Wide	*BLM*	*Non-BLM*
Cadiz Valley and Chocolate Mountains	—	—	—

Table II.2-8
Potential Distribution of Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation Across DRECP Ecoregion Subareas Under the No Action Alternative

Ecoregion Subarea	Long-Term Disturbance and Project Area		
	Plan-Wide	*BLM*	*Non-BLM*
Imperial Borrego Valley	1,400	400	1,000
Kingston and Funeral Mountains	—	—	—
Mojave and Silurian Valley	—	—	—
Owens River Valley	—	—	—
Panamint Death Valley	—	—	—
Pinto Lucerne Valley and Eastern Slopes	—	—	—
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	—	—	—
West Mojave and Eastern Slopes	—	—	—
Total	**1,400**	**400**	**1,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.2.1.3.4 Transmission

The transmission components for the No Action Alternative would be the same as those described for the Preferred Alternative in Section II.3.1.4.4, although the location of transmission facilities would vary from the Preferred Alternative since distribution of new generating facilities would be different.

- Estimated Long-Term Ground Disturbance – Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of transmission impacts. This estimate also includes impacts that occur as a consequence of construction activities, including construction areas, laydown yards, and storage facilities. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered long term for the purpose of analysis.
- Total Project Area – An estimate of the total area occupied by a given project including the full width of the right-of-way (ROW). For technologies where the impacts may be spread across a greater area, the permanent impacts are distributed over a larger area.

Table II.2-9
Right-of-Way Requirements for Transmission Associated with Renewable Energy Development in the No Action Alternative

Ecoregion Subarea	Long-Term Disturbance and Project Area		
	Plan-Wide	*BLM*	*Non-BLM*
Cadiz Valley and Chocolate Mountains	14,000	8,000	6,000
Imperial Borrego Valley	12,000	3,000	9,000
Kingston and Funeral Mountains	—	—	—
Mojave and Silurian Valley	2,000	1,000	1,000
Owens River Valley	—	—	—
Panamint Death Valley	—	—	—
Pinto Lucerne Valley and Eastern Slopes	600	200	400
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	1,000	900	300
West Mojave and Eastern Slopes	4,000	400	4,000
Total	**36,000**	**14,000**	**22,000**

Source: See Appendix K, Transmission Technical Group Report.
Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

II.2.1.3.4.1 Transmission Outside the Plan Area

As with other alternatives, the No Action Alternative would result in transmission development outside the Plan Area. The potential direct effects of potential future transmission outside the Plan Area associated with development of renewable energy projects and transmission facilities inside the Plan Area are, however, programmatically described and analyzed in Volume IV of the DRECP for each environmental resource category. This section presents a description of the transmission facilities outside the Plan Area that are programmatically analyzed in Volume IV.

The assumptions used to calculate acreages of effects for transmission and substation facilities in the Plan Area are the same as those used to calculate effects of transmission and substations outside the Plan Area, and are described in Section II.3.1.4.4. However, approval of the DRECP would not result in any approval of the potential future transmission lines outside the Plan Area that are discussed here. All future transmission lines outside the Plan Area would require new applications by the developer or utility, compliance with the California Environmental Quality Act and NEPA as appropriate, and approvals from the developer (if municipal utilities or irrigation districts) or from the California Public Utilities Commission (if investor-owned utilities) prior to construction.

Table II.2-10 provides the acreage of effects for transmission and substations outside of the DRECP boundary. For ease of analysis, the transmission lines and substations have been clustered into general geographic boundaries.

Table II.2-10
Right-of-Way Requirements for Transmission Outside the DRECP Plan Area Associated with Renewable Energy Development – No Action Alternative

Geographic Area	Transmission	
	Acres	*Miles*
San Diego	2,000	94
Los Angeles	2,000	83
Central Valley	15,000	274
Rialto/Moreno Valley/Devers	12,000	484
Total Outside Plan Area	**32,000**	**935**

Source: See Appendix K, Transmission Technical Group Report.
Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

The potential new transmission lines outside the Plan Area are listed below.

- **San Diego Area:** One 500-kilovolt (kV) line from the Imperial Valley Substation to the existing Sycamore Substation (San Diego).
- **Los Angeles Area:**
  - One 500 kV line from the existing Vincent Substation (just inside the DRECP boundary) to the existing Lighthipe Substation.
  - One 500 kV line from the existing Vincent Substation (just inside the DRECP boundary) to the existing Mesa Substation.
  - One 500 kV line Mead, Station 6 to Station 7.
- **Central Valley:**
  - One 500 kV transmission line from the Whirlwind Substation (just inside the DRECP boundary) to the Pacific Gas and Electric (PG&E) Midway 500 kV Substation.
  - Two 500 kV lines from the PG&E Midway Substation to the Tesla/Tracy Substation.

- **Rialto/Moreno Valley/Devers Area:**
  - One 500 kV line from the Devers to Vincent Substation.
  - One 500 kV line from Devers to Rancho Vista Substation.
  - One 500 kV line from Colorado River Substation to existing Valley Substation. About 103 miles of this line would be outside the DRECP boundary.
  - Three 500 kV lines from Midway X (Imperial Valley) to Devers Substation. About 220 miles of this corridor would be outside the DRECP boundary.

II.2.2 Existing BLM Land Use Plan Elements of the No Action Alternative

The following section summarizes the No Action Alternative for the BLM Land Use Plan Amendment (LUPA). This alternative brings forward the existing management as described in the CDCA Plan, Bishop RMP, and Caliente RMP, including applicable amendments, as they apply to the BLM's decision area (Plan Area and CDCA outside of the Plan Area). Only land use plan level-decisions described in these plans are presented and summarized (see Figure II.2-2). In the absence of specific resource decisions, management has occurred based on federal law, regulation, and BLM policy and guidance, and since no resource decisions would be made, no decisions are described in this alternative. Current BLM land use plans are available online at: http://www.blm.gov/ca/st/en/prog/planning.html.

II.2.2.1 BLM Renewable Energy Policies

II.2.2.1.1 Solar

Under the No Action Alternative, solar energy development on BLM-administered land would be directed by the Solar PEIS ROD (see Figure II.2-3). The Solar PEIS ROD (October 2012; BLM 2012a) amended BLM plans in six southwestern states, including California, and created a comprehensive set of updated and revised policies and procedures. The BLM California land use plans that were amended by the Solar PEIS ROD (BLM 2012a) include the CDCA Plan, the Bishop RMP, and the Caliente RMP.

The Solar PEIS ROD established categories of lands to be excluded from utility scale solar development and identified specific locations well suited for utility scale production of solar energy, called Solar Energy Zones (SEZs). The ROD also allowed for responsible solar energy development in variance areas outside of SEZs in accordance with the newly established variance process, and established programmatic design features for utility scale solar energy development on BLM lands (BLM 2012a).

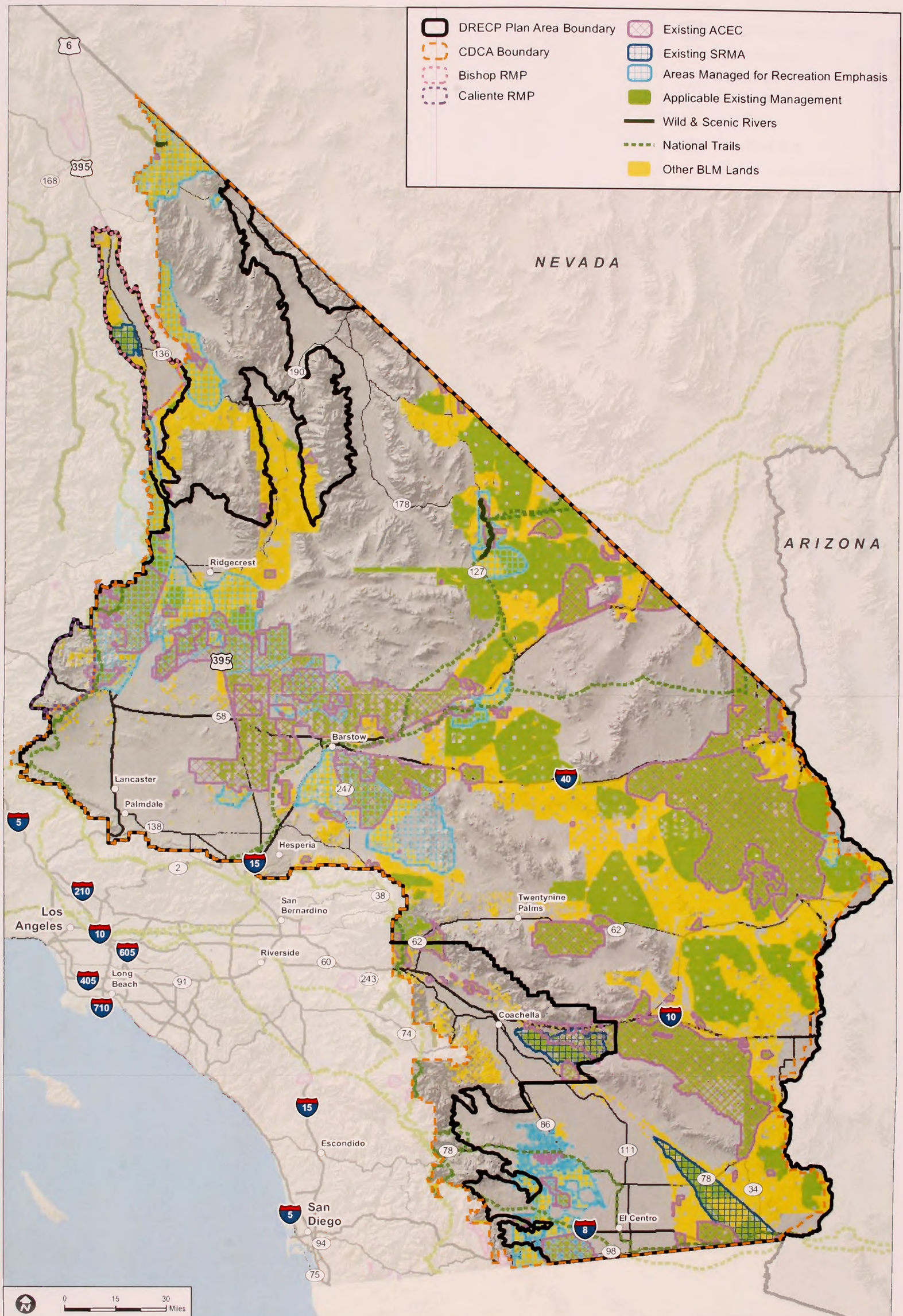
The Solar PEIS ROD established two SEZs in the Plan Area—Riverside East and Imperial East. A third SEZ was established through the West Chocolate Mountains Renewable Energy Evaluation Area ROD (August 2013). These three SEZs total approximately 164,000 acres. In addition, approximately 577,000 acres of variance lands are in the Plan Area. The remaining BLM lands in the Plan Area are excluded from utility-scale solar development, and would not be developed under the No Action Alternative. BLM Solar Energy Program policies can be found in Appendix B of the Solar PEIS ROD (BLM 2012a), starting on page 146.

As of November 2013, 13 first-in-line solar ROW applications in the Plan Area are considered "pending applications" by the Solar PEIS and are not subject to any of the decisions of the Solar PEIS ROD. These applications, covering approximately 82,808 acres, could continue to be processed under the No Action Alternative, regardless of their location in exclusion, variance, or SEZ lands. More information on pending applications may be found in Appendix B of the Solar PEIS ROD, Section B.1.2 (BLM 2012a).

II.2.2.1.2 Wind

The Wind Energy Development Programmatic Environmental Impact Statement (Wind PEIS) ROD (BLM 2005) established policies, best management practices, and minimum mitigation requirements for wind development on BLM land; these policies, practices, and mitigation requirements were revised through BLM Instruction Memorandum 2009-043 (BLM 2008a). However, the Wind PEIS did not amend BLM plans in the DRECP Plan Area. Thus, under the No Action Alternative, wind energy development within the Plan Area would be dictated by the CDCA Plan as amended, Bishop RMP, and Caliente RMP.

The CDCA Plan allows wind energy generation facilities to be considered in Multiple Use Class (MUC) L (limited use), M (moderate use), and I (intensive use) lands if the project site is identified in the plan (which may require a plan amendment) and when NEPA requirements are met. Sites not identified must be considered through a Plan Amendment process. No wind energy is allowed in MUC C (controlled) lands. The Bishop and Caliente RMPs do not address wind energy. Thus, under the No Action Alternative, wind energy ROW applications would continue to be considered on a case-by-case basis in MUCs L, M, and I lands in the CDCA and in lands covered by the Bishop and Caliente RMPs within the Plan Area. If wind energy is proposed in the Bishop or Caliente planning areas, the BLM would evaluate the application on a case-by-case basis to determine if it could be developed consistent with the goals and objectives for the application area. This would amount to approximately 6,719,000 acres within the CDCA, and approximately 116,000 acres in the Bishop and Caliente planning areas.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.2-2

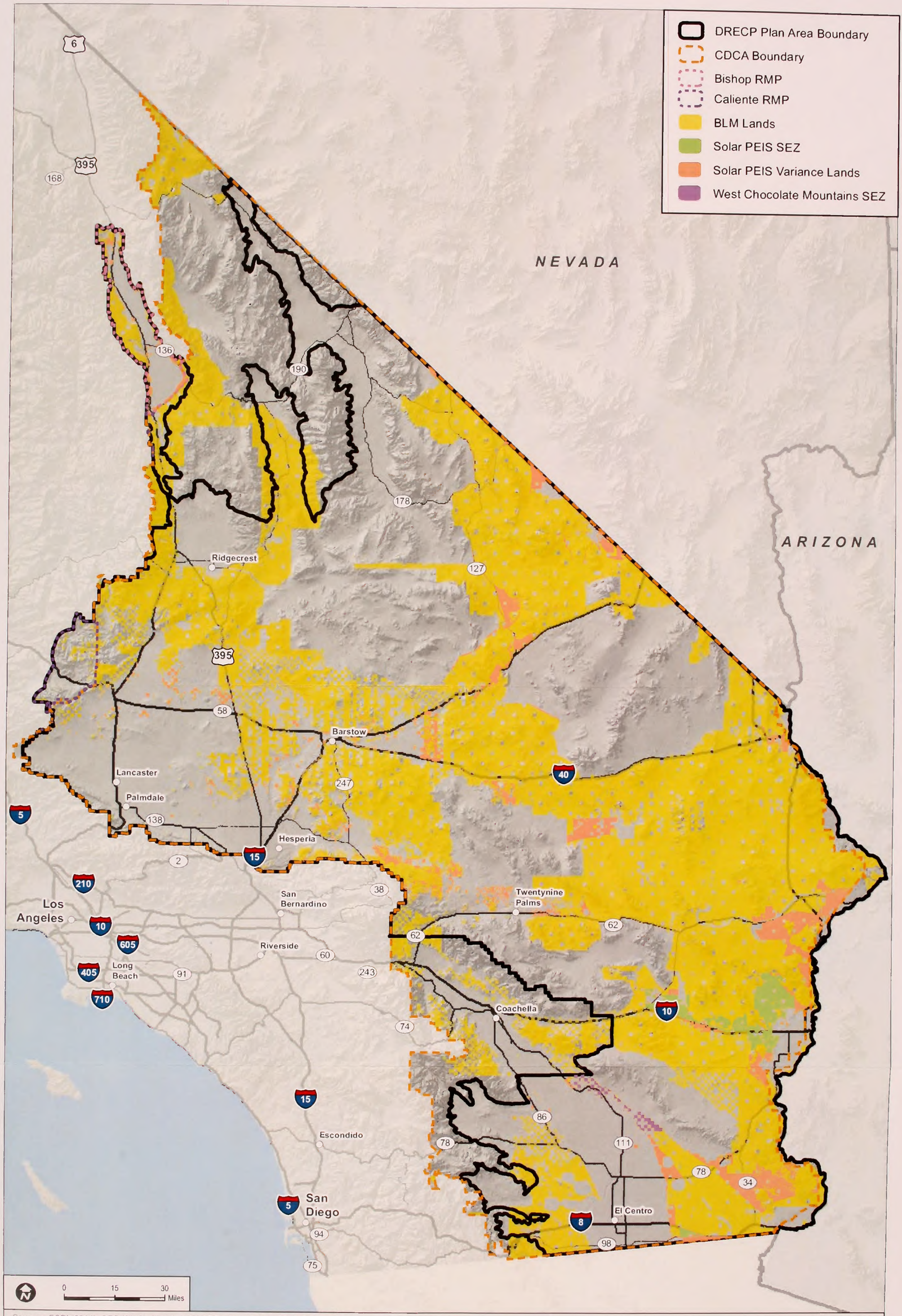
BLM Decision Area and Applicable Existing Management

Draft DRECP and EIR/EIS

August 2014

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_II\figII.2-2.mxd 8/19/2014

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.2-3

Solar Programmatic Environmental Impact Statement Designations

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_II\figII.2-3.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

II.2.2.1.3 Geothermal

The ROD for the PEIS for Geothermal Leasing in the Western United States (Geothermal PEIS) (December 2008; BLM 2008b) evaluated various alternatives for allocating lands as being closed or available for leasing and analyzes standard and special stipulations to protect sensitive resources. The document describes the proposed amendments for 122 BLM-administered RMPs to adopt the allocations, stipulations, procedures, and best management practices analyzed in the Geothermal PEIS. The Geothermal PEIS provides site-specific analysis for 19 pending geothermal lease applications for lands within 7 geographical areas that were filed prior to January 1, 2005, including two lease parcels located within the West Chocolate Mountains Renewable Energy Evaluation Area (WCM REEA). The Geothermal PEIS ROD did not amend any BLM plans within the Plan Area (BLM 2008b). Under the No Action Alternative, geothermal energy development located within the Plan Area would be allowed as analyzed under the FEIS and ROD for the Truckhaven Geothermal Leasing Area (BLM 2008c), the FEIS and ROD for the Imperial Sand Dunes Recreation Area Management Plan (ISD RAMP) (BLM 2013a), and the FEIS and ROD for the WCM REEA (BLM 2013b) (see Figure II.2-4).

Competitive geothermal lease nominations would also be considered on a case-by-case basis in MUCs L, M, and I lands in the CDCA if the site is identified in the plan (this may require a plan amendment).

II.2.2.2 BLM Conservation Areas

II.2.2.2.1 National Conservation Lands

The BLM currently manages approximately 3.9 million acres within the CDCA as part of the NLCS, also identified as National Conservation Lands. This includes Wilderness Areas, Wilderness Study Areas (WSAs), a Wild and Scenic River, National Scenic and Historic Trails, and other special areas identified through acts of Congress. Under the No Action Alternative, additional lands designated by Congress in Public Law 111-11, Additions to the National Wilderness Preservation System, as public land within the CDCA administered by BLM for conservation purposes would not be identified as National Conservation Lands or added to the NLCS by way of land use plan amendments.

II.2.2.2.1.1 Wilderness

The Plan Area contains 2,856,000 acres of designated wilderness within BLM-administered lands (See Table III.14-1 and Figure III.14-1 in Volume III, Chapter III.14, BLM Land Designations, Classifications, Allocations, and Lands with Wilderness Characteristics). These lands are managed under the direction of the Wilderness Act of 1964 and *BLM Manual 6340—Management of Designated Wilderness* (BLM 2012b). The BLM manages these lands to protect wilderness character, including unroaded, undeveloped, natural qualities, and opportunities for primitive recreation.

Management of Wilderness Areas would remain the same under the No Action Alternative.

II.2.2.2.1.2 Wilderness Study Areas

The Plan Area contains six WSAs, totaling 378,000 acres. (See Table III.14-2 and Figure III.14-3 in Chapter III.14.) These lands are managed under the direction of the Federal Land Policy and Management Act (FLPMA) and *BLM Manual 6330—Wilderness Study Areas* (BLM 2012c). Under that direction, the BLM manages these areas to protect wilderness values until Congress makes a final determination to either designate the area as wilderness or release it.

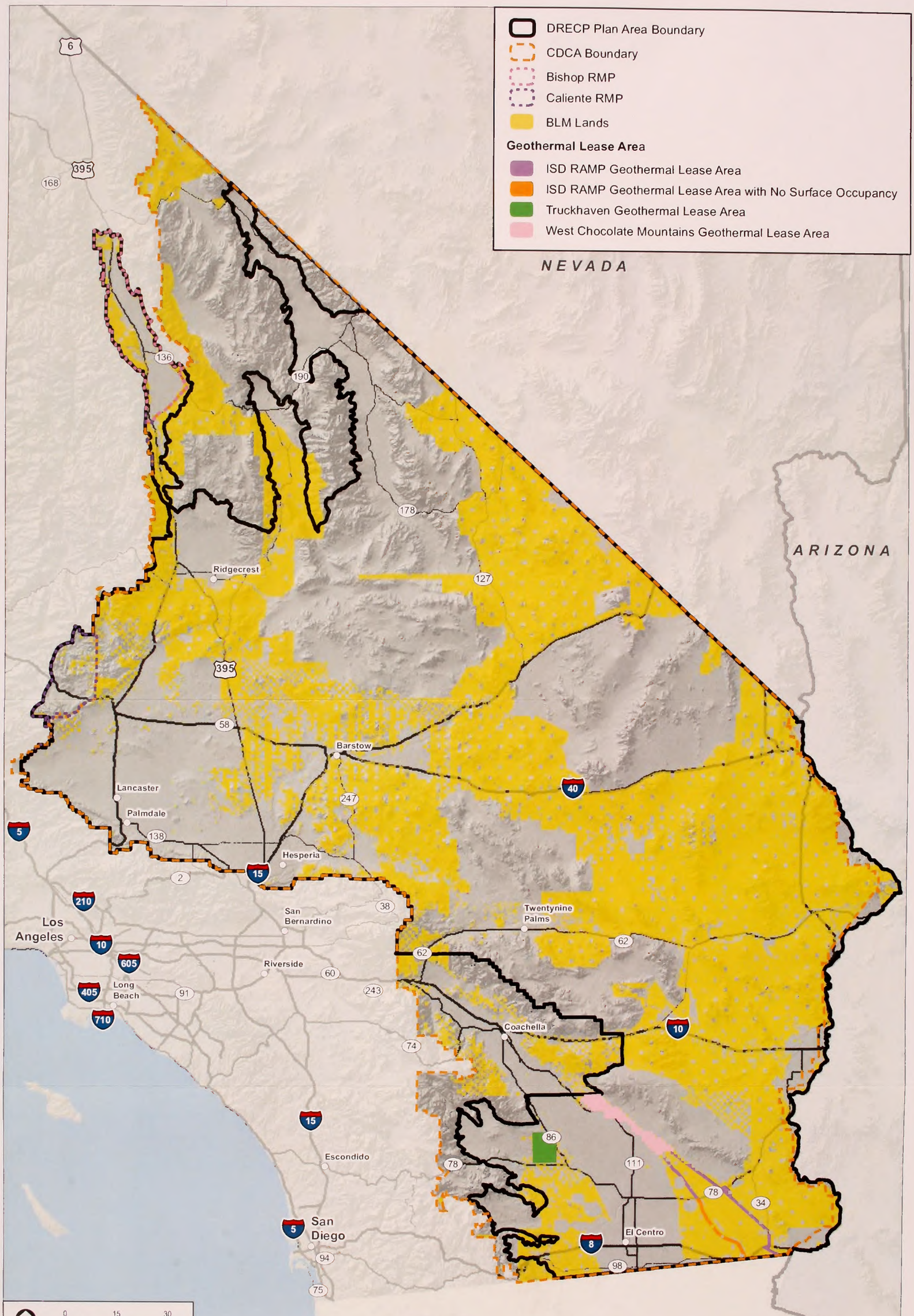
Management of WSAs would remain the same under the No Action Alternative.

II.2.2.2.1.3 Wild and Scenic Rivers

The Amargosa River is the only Wild and Scenic River within the Plan Area (see Figure III.14-2 in Affected Environment). The Amargosa River has 22.7 miles within the Plan Area that are also within BLM-administered lands. The river corridor is 0.25 mile from the ordinary high water mark on either side of the channel. The Amargosa River is managed under the direction of the Wild and Scenic Rivers Act of 1968 and *BLM Manual 6400—Wild and Scenic Rivers* (BLM 2012d), to protect the "outstandingly remarkable values" for which the river was designated, the free flowing condition, and water quality.

Management of the Wild and Scenic River Corridor would remain the same under the No Action Alternative. A comprehensive river management plan is currently under development for the river corridor and will outline specific management objectives and actions to protect the free-flowing conditions, outstandingly remarkable values, and water quality. Until that time, all actions will be reviewed on a case-by-case basis to ensure that these values are protected or enhanced. This plan will also identify a final lateral boundary for the corridor. Until that time, an interim boundary of 0.25 mile on either side of the river (above mean high water mark) will constitute the corridor,

In addition, the Mojave River (2.9-mile segment) and Surprise Canyon Creek (5-mile segment) were found to be eligible for Wild and Scenic River designation under previous CDCA plan amendments (West Mojave Plan [WEMO] and Northern and Eastern Mojave Desert Management Plan [NEMO], respectively). A suitability analysis for these segments will not be conducted in the DRECP due to the targeted nature of this plan amendment. Therefore, the eligible segments of both streams will remain under protective management under all alternatives until a suitability analysis is completed in a future planning effort. Both of these stream segments are within designated ACECs, and protective management actions are contained on the respective ACEC Worksheets (see Afton Canyon for Mojave [Appendix L]).



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.2-4

Geothermal Programmatic Environmental Impact Statement Areas Available for Leasing

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_II\figII.2-4.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

II.2.2.2.1.4 National Scenic and Historic Trails

The BLM manages portions of three National Scenic and Historic Trails in the Plan Area: the Pacific Crest National Scenic Trail (114 miles within the Plan Area), the Juan Bautista de Anza National Historic Trail (83 miles within the Plan Area), and the Old Spanish National Historic Trail (367 miles within the Plan Area). National Scenic and Historic Trails are managed under the direction of the National Scenic and Historic Trails Act of 1968 and *BLM Manual 6250—National Scenic and Historic Trail Administration* (BLM 2012e). None of these trails have a designated trail management corridor on BLM lands, and under the No Action Alternative, none would be designated.

II.2.2.2.2 Areas of Critical Environmental Concern

There are currently 89 ACECs within the Plan Area, covering 2,395,000 acres (see Figure III.14-4 and Table III.14-3 of Chapter III.14, and Appendix L; non-overlapping acres on BLM-administered lands outside other designations). This number includes DWMAs, which are managed as ACECs under the CDCA Plan.

Management of ACECs varies on a case-by-case basis, based on individual land use plans and ACEC management plans. Acreage, land use allocations, and management actions for individual current ACECs is detailed in Appendix L.

II.2.2.2.3 Wildlife Allocations

Currently the CDCA Plan recognizes over 365 species of vertebrates and thousands of invertebrate organisms in a diversity of wildlife habitats which reside within the CDCA. In order to protect unique and sensitive habitats; sensitive, rare, threatened, and endangered species; and representatives of the more common desert habitats and ecosystems and the fish and wildlife resources they support, the CDCA Plan established various types of management areas. Map 3 in the CDCA Plan identifies the ACECs, HMP, road restriction areas, and the special attention areas that the CDCA Plan established. Each of these areas, along with the requirements set by the MUC that overlays the CDCA land, has specific administration requirements to manage the underlying land for wildlife resources.

Among other tools, the CDCA Plan uses designation of Special Areas (SA) to manage for wildlife. This tool highlights habitats and species known to be important for special consideration in the environmental assessment process for any kind of project. Additionally Map 4 in the CDCA Plan identifies the geographic location that is managed for specific wildlife. Tables 2 and 3 in the CDCA Plan identify specific wildlife species in the CDCA and the number of acres that is managed for each species. Table II.2-11 includes the SAs designated in the CDCA Plan, as amended. Note that many SAs were

also designated as ACECs, and therefore are not included here. Existing ACECs are discussed in Section II.2.2.2.2.

Table II.2-11
Management Areas for Fish and Wildlife (Table Updated February 1999)

Location	Acres	Special Wildlife Habitat	Federally Listed Species	State-Listed Species	BLM Sensitive Species	Other Species
Cottonwood Creek	5,000	X				X
Deep Spring Valley (shadscale community and black toad)	10,000	X				X
Western Rand Mountains	23,000				X	
East Slope Inyo Mountains	64,000	X				X
Saline Valley (dunes, mesquite marsh)	9,000	X				X
Hunter–Cottonwood Mountains, Grapevine Canyon (bighorn sheep)	59,000					X
Lee Flat (shadscale community)	33,000	X				
Black Springs	<1,000	X				
Darwin Falls Canyon	6,000	X				X
Argus Mountains (bighorn sheep)	90,000			X		X
Argus Range (Inyo towhee)	9,000	X		X		X
Panamint Lake	4,000	X				
West Panamint Mountains Canyon	121,000	X				X
Surprise Canyon	13,000	X				X
Rose Valley (Mohave ground squirrel)	18,000			X		
East Sierra Canyons	88,000	X				X
Sand Canyon	2,000	X				X
Robber's Roost	3,000					X
Upper Amargosa River	3,000	X				
Shoshone Cave (whip-scorpion)	<1,000					X
Chicago Valley (mesquite)	10,000	X				

Table II.2-11
Management Areas for Fish and Wildlife (Table Updated February 1999)

Location	Acres	Special Wildlife Habitat	Federally Listed Species	State-Listed Species	BLM Sensitive Species	Other Species
California Valley (mesquite)	4,000	X				
Amargosa River/Grimshaw	14,000	X		X		X
Kingston Range	64,000	X				X
Salt Creek (Dumont)	3,000	X				
Lone Tree Canyon (Bighorn Sheep Reintroduction Area)	47,000			X		
Sierra-Mojave-Tehachapi Ecotone	162,000	X		X		X
Desert Tortoise Natural Area	26,000			X	X	
Koehn Lake	4,000	X				
Red Mountain/El Paso Mountains (raptors)	304,000					X
Western Mojave Crucial Habitat (tortoise)[1]	512,000	X		X	X	X
Harper Dry Lake	4,000	X				X
Superior Valley (Joshua tree woodland and Mohave ground squirrel habitat)	55,000	X		X		
Newberry Granite Mountains (raptors)	256,000					X
Ord Mountains (Jojoba habitat)	6,000	X				
Shadow Valley (tortoise)	42,000				X	
Clark Mountain	20,000	X				X
Ivanpah Valley (tortoise crucial Habitat)	38,000				X	
East Cronese Lake	8,000	X				X
Cady Mountains (bighorn sheep)	67,000					X
Afton Canyon	7,000	X				X
Pisgah lava flow	17,000	X				

Table II.2-11
Management Areas for Fish and Wildlife (Table Updated February 1999)

Location	Acres	Special Wildlife Habitat	Federally Listed Species	State-Listed Species	BLM Sensitive Species	Other Species
Fenner/Chemeheuvi Valleys (tortoise crucial habitat)	692,000	X			X	
Stepladder Mountains (teddy bear cholla thicket)	25,000	X				
Chemehuevi Wash	333,000	X				
Whipple Mountains	55,000	X				X
Vidal Wash	77,000	X				
Bullion Mountains (bighorn sheep)	16,000					X
Cadiz Dunes	32,000	X				X
Whitewater Canyon	12,000	X				X
Big Morongo Canyon	4,000	X		X		X
Coachella Valley (fringe-toed lizard habitat)	4,000			X		X
Little San Bernardino Mountains (palm oasis)	<1,000	X				
Santa Rosa Mountains	196,000	X	X	X		X
Salt Creek (pupfish/rail habitat)	3,000	X	X	X		
Orocopia Mountains (bighorn sheep)	55,000					X
Granite/Palen Mountains (bighorn sheep)	67,000					X
Midland (ironwood thicket)	44,000	X				
Rice Valley Dunes	9,000	X				
McCoy Wash	20,000	X				
Chuckwalla Bench (tortoise crucial habitat)	225,000	X			X	
Chuckwalla Bench	80,000	X			X	
Chuckwalla Mountains (bighorn sheep)	63,000					X
Corn Springs	4,000	X		X		

Table II.2-11
Management Areas for Fish and Wildlife (Table Updated February 1999)

Location	Acres	Special Wildlife Habitat	Federally Listed Species	State-Listed Species	BLM Sensitive Species	Other Species
Ford Dry Lake	6,000	X				X
Chuckwalla Valley Dune Thicket	3,000	X				
Milpitas Wash	125,000	X				
Palo Verde Mountains (saguaro)	2,000	X				
Picacho Land and Wildlife Management Area	86,000					X
Indian Wash	29,000	X				X
Algodones Dunes	132,000	X				X
East Mesa Flat-tailed Horned Lizard	110,000					X
San Sebastian Marsh/San Felipe Creek	23,000	X				X
Coyote Mountains/Davies Valley (magic gecko)	38,000			X		
Smuggler's Cave (southern chaparral)	4,000	X				X
Yuha Basin	98,000					X
Pinto Wash	5,000	X				
Soldier Pass/Piper Mountains (bighorn sheep)		X			X	X
E. Slope White Mountains (bighorn sheep)		X			X	X

Notes:

[1] Includes Fremont/Stoddard Valleys (desert tortoise crucial habitat); Indian Wells Valley (Mohave ground squirrel habitat); Fremont Valley (Mohave ground squirrel habitat); Boron/Black Hills (Mohave ground squirrel habitat) and Western Mojave (desert saltbush community).

In addition to the Special Areas listed in Table II.2-11, the BLM has amended the CDCA Plan to include Flat-Tailed Horned Lizard Management Areas, and the Mohave Ground Squirrel Conservation Area.

Flat-Tailed Horned Lizard Management Areas

The Flat-Tailed Horned Lizard Management Areas were developed as part of the Flat-Tailed Horned Lizard Rangewide Management Strategy (Flat-Tailed Horned Lizard

Interagency Coordinating Committee 2003), and total approximately 354,000 acres in California. The BLM amended the CDCA in 2004 to adopt this strategy, which included four Flat-Tailed Horned Lizard Management Areas: East Mesa, West Mesa, Yuha Basin, and Borrego Badlands, and include approximately 264,000 acres of BLM-administered land.

Each Flat-Tailed Horned Lizard Management Area is controlled by multiple agencies. Flat-Tailed Horned Lizard Management Areas were designed to include most flat-tailed horned lizard habitat identified as key areas in previous studies. The Flat-Tailed Horned Lizard Management Areas are the core areas for maintaining self-sustaining populations of flat-tailed horned lizards in perpetuity. The Flat-tailed Horned Lizard Rangewide Management Strategy established certain conservation measures.

Mohave Ground Squirrel Conservation Area

The WEMO Amendment (BLM 2006) establishes an approximately 1,727,000-acre conservation area for the long-term survival and protection of the Mohave ground squirrel. This area overlaps portions of the Fremont-Kramer and Superior-Cronese DWMAs, and additional essential habitats located west and north of the two tortoise DWMAs. Approximately 1,309,000 acres of this area are managed by the BLM and are designated as a Wildlife Habitat Management Area (WHMAs).

Bishop and Caliente Resource Management Plans

The Bishop and Caliente RMPs do not identify Wildlife Allocations.[1]

II.2.2.2.4 Special Recreation Management Areas

There are currently two designated SRMAs, Alabama Hills and Imperial Sand Dunes, within the Plan Area, covering 193,000 acres. In addition, there are 30 other areas managed for recreation emphasis under the "limited" vehicle access designation within the multiple-use classes of intensive, moderate, or limited. Management of these 2 SRMAs and the 30 other areas varies on a case-by-case basis, based on the land use plan or land use plan amendment designating them, and area specific management plans. Acreage, land use allocations, MUCs, and management actions for these 32 individual areas are detailed in Appendix L.

---

1 The Bishop RMP designates Yearlong Protection for endangered, threatened, candidate, and sensitive plant and animal habitats and tule elk (*Cervus canadensis*) calving areas. Yearlong protection is defined as "No discretionary actions which would adversely affect target resources would be allowed." The Bishop RMP also requires Seasonal Protection from November 1 to April 30 for mule deer (*Odocoileus hemionus*) winter range (BLM 1993). These management prescriptions are based on the presence of species and are not specifically mapped in the plan; therefore , they are not included in Wildlife Allocations.

II.2.2.2.5 Open and Limited Off-Highway Vehicle Areas

There are currently 13 areas managed as open and limited off-highway vehicle (OHV) areas with the plan area. These OHV areas include lands designated in the CDCA as "open" vehicle access motorized vehicle play areas and "limited" vehicle access areas. These 13 areas are within the MUCs I and M. Acreage, land allocations, and management actions for these 13 OHV areas are detailed in Appendix L.

II.2.2.2.6 Lands with Wilderness Characteristics

The ISD RAMP ROD identifies 42,083 acres as possessing wilderness characteristics, and includes management actions to protect some of those characteristics while also allowing OHV and other recreation opportunities. See Section II.2.2.3.12 for specific management actions on these lands.

II.2.2.3 BLM-Specific Management

II.2.2.3.1 Air Resources

II.2.2.3.1.1 California Desert Conservation Area Plan, as Amended

Management of Air Resources under the CDCA Plan is described on page 115 of the 1999 Reprint (Air Quality; BLM 1999) and are listed here:

- To encourage maintenance of air quality as needed for Department of Defense operations.
- To ensure that proposed major stationary sources are located at optimum locations to minimize future air quality degradation in the CDCA.
- To establish an active BLM program for cooperating with the California Air Resources Board, and all other agencies responsible for air quality in the CDCA, in the implementation of the air-quality management plan.

In summary, the management actions contained within the CDCA Plan include:

- Manage all MUCs (C, L, M, and I) to protect their air quality and visibility in accordance with Class II objectives of Part C of the Clean Air Act Amendments unless otherwise designated another class by the State of California as a result of recommendations developed by any BLM air-quality management plan.
- Coordinate and fully support state and local government air quality planning efforts, conducting in-house planning to minimize air pollution sources on public lands, and field studies to determine impact of BLM management activities and those from outside sources on BLM lands.

- Integrate the Clean Air Act into the BLM planning efforts.
- Develop an air-quality management plan for BLM lands in the CDCA.
- Actively participate in hearings and proceedings for siting of major stationary sources in the CDCA. Minimize emissions from these sources and select a most suitable site for the overall air-quality benefit of the CDCA, if it exists.
- Actively participate in the preparation of air quality management plans developed by responsible air-management authorities in the CDCA.

West Mojave Plan/CDCA Plan Amendment

There are no goals and objectives or management actions specifically identified for this resource under the WEMO.

Northern and Eastern Mojave Desert Management Plan/CDCA Plan Amendment

There are no goals and objectives or management actions specifically identified for this resource under the NEMO.

Northern and Eastern Colorado Desert/CDCA Plan Amendment

There are no goals and objectives or management actions specifically identified for this resource under the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO).

Although air quality was not specifically addressed in the NECO, the following management actions were found to improve air quality: the Issue 2: Recovery of Desert Tortoise and to result in increased wind erosion of soils and PM_{10} (particulate matter less than or equal to 10 microns in diameter) concentrations from Issue 5: Motorized-Vehicle Access/Routes of Travel Designations/Recreation (BLM 2002b).

Imperial Sand Dunes Recreation Area Management Plan and Amendment to the CDCA Plan

The goals and objectives for Air Resources under the ISD RAMP are described on page 2-24 of the ROD (BLM 2013a), and include:

- Maintain or improve air quality as established by the National Ambient Air Quality Standards and California Ambient Air Quality Standards through cooperative management of emissions with industry, the State of California, and federal agencies.
- Strive to minimize, within the scope of the BLM's authority, any emissions that may cause violations of air quality standards, add to acid rain, or degrade visibility.

In summary, the management actions contained within the ISD RAMP included:

- Comply with the applicable State of California air quality standards for all actions that will contribute to particulate matter emissions in the air as a result of actions taken.
- As needed, based on the BLM Dust Control Plan, treat the entry road to Dunebuggy Flats Campground for dust control to reduce the impact of OHV activities on air quality, as personnel and funding levels allow.
- Install air meters (numbers and locations to be determined) for ozone and PM_{10} in the planning area, if requested by the Imperial County Air Pollution Control District (ICAPCD) or the U.S. Environmental Protection Agency. Implement actions to mitigate for contributions to the nonattainment due to activities in the planning area, as requested by ICAPCD, and as personnel and funding levels allow.
- Evaluate impacts of activities within the planning area to air quality nonattainment. Implement BLM Dust Control Plan to reduce the effects to air quality as required by the ICAPCD.
- Use the best available control measures. These measures may include hardening of applicable roadways, watering or applying dust suppressants to roadways, limiting vehicle speeds, or restricting vehicular access. The BLM maintains a Dust Control Plan with the ICAPCD and will use this plan to determine what best available control measures to use.

II.2.2.3.1.2 Caliente Resource Management Plan

There are no goals and objectives or management actions specifically identified for Air Resources under the Caliente RMP.

II.2.2.3.1.3 Bishop Resource Management Plan

Standard Operating Procedures (SOPs) outlined in the Bishop RMP, which provide specific guidelines for managing resources and activities throughout the field office area, include the following (BLM 1993, p. 13):

- Secure any necessary permits or clearances from state and local agencies relative to air quality requirements for projects that may impact air quality.

II.2.2.3.1.4 Solar Programmatic Environmental Impact Statement

The 2012 ROD for the Solar PEIS (BLM 2012a) amended land use allocation decisions and utility-scale transmission decisions within 89 BLM plans in 6 southwestern states, including the CDCA Plan, the Bishop RMP, and the Caliente RMP. Amendments specific to Air Resources include amending land use plans with programmatic design features that

would be required for all utility-scale solar energy projects on BLM-administered land, including (p. 90):

- Early consultation with BLM regarding potential conformance to air quality and other constraints.
- Siting, designing, and constructing solar facilities to minimize impacts on air quality.
- Monitoring terms and conditions for air quality by project developer including consultation with BLM.
- For reclamation of the site, incorporating design features listed for construction.

II.2.2.3.2 Comprehensive Trails and Travel Management

II.2.2.3.2.1 California Desert Conservation Area Plan, as Amended

Management for Comprehensive Trails and Travel Management under the CDCA Plan is described on page 75 (Motorized-Vehicle Access Element; BLM 1999), and include:

- Provide for constrained motorized vehicle access in a manner that balances the needs of all desert users, private landowners and other public agencies.
- When designating or amending areas or routes for motorized vehicle access, to the degree possible, avoid adverse impacts to desert resources.
- Use maps, signs and published information to communicate the motorized vehicle access situation to desert users. Be sure all information materials are understandable and easy to follow.

In summary, the management actions contained within the CDCA Plan include:

- Designation of all public lands in the California desert as "open," "closed," or "limited." Area designations are made on a basis of multiple-use classes with exceptions set for in the CDCA Plan.
    - Open Areas: Vehicle travel is permitted anywhere in the area if the vehicle is operated responsibly in accordance with regulations and subject to permission of private land owners if applicable. This applies to (1) lands in Class I specifically designated as "open", and (2) certain sand dunes and dry lakebeds specifically listed in the CDCA Plan.
    - Closed Areas: No vehicle travel is allowed. This applies to (1) all wilderness areas when established by Congress (unless exempted); (2) land in some ACECs and Special Areas where provided in their management plan; (3) certain sand dunes and dry lakebeds specifically listed in the CDCA Plan; and (4) other

identified areas closed under the Interim Critical Management Plan (listed on p. 76 of CDCA Plan as amended).

  - Limited Areas: Vehicle access is allowed only on certain routes of travel. In areas of limited vehicle use, special attention will be given to identifying conflict areas, zones of route proliferation, and special sites or resources being damaged by vehicle use. Lands not specifically designated as "open" or "closed" in the CDCA are designated as "limited." Specific limitations for designation in each of the multiple use classes are detailed on page 77 of the CDCA Plan.

- Unless amended, stopping and parking will be limited to within 300 feet of the route.
- Unless amended, specific stopping and parking areas may be signed as open or closed to protect sensitive resources.

West Mojave Plan/CDCA Plan Amendment

The goals and objectives for Comprehensive Trails and Travel Management under the WEMO are described in Table 2-23 of the plan. In summary, the management actions contained within the WEMO include:

- Maintaining existing route network (adopted June 30, 2003) except for minor modifications including select route closures and designation of additional open routes in several areas.
- Placing restrictions on motorized vehicles stopping/parking on public lands within and outside of DWMAs.
- Designating open routes as available for a variety of use including commercial, recreational, casual access, and noncompetitive permitted uses.
- Providing route management actions including signage on open routes and rehabilitation of closed routes.

Northern and Eastern Mojave Desert Management Plan/CDCA Plan Amendment

The goals and objectives for Comprehensive Trails and Travel Management under the NEMO are described on page 2-28 (BLM 2002a):

In summary, the management actions contained within the NEMO include:

- Route designation occurs in all critical desert tortoise habitat, consistent with federal regulation and CDCA Plan guidance, based on the existing route inventory. Refer to Chapter 8, Figures 4c and d for the route inventory existing network for Alternative 1 (No Action). Routes not approved for vehicle access would, in most instances, be obliterated, barricaded, signed, or marked. Specific techniques chosen

would depend on location, potential effectiveness, and sensitivity of resources and availability of manpower and funding.

- Stopping, parking and camping will be allowed within 100 feet of route centerline within proposed DWMAs.
- Navigable washes may be designated open or limited, if they are major vehicle transportation routes in DWMAs. Outside of DWMAs, washes would be designated consistent with 43 Code of Federal Regulations (CFR) criteria and multiple-use guidelines. Parking and camping will be allowed only within the banks of the wash.

Northern and Eastern Colorado Desert/CDCA Plan Amendment

The goals and objectives for Comprehensive Trails and Travel Management under the NECO RMP are described on page 2-66 of the plan (BLM 2002b).

In summary, the management actions contained within the NECO include:

- BLM would require motorized-vehicle access to be managed in accordance with current MUC L guidelines, irrespective of MUC, except for MUC C (wilderness) and areas designated "open."
- BLM would designate "existing" routes as "open" for motorized-vehicle use except for certain circumstances including where specific biological parameters minimize harassment of wildlife and significant disruption of habitats. BLM proposed route-specific designations, including maps.
- A total of 4,743 miles of unpaved routes were available for use by motorized vehicles and a total of 239 miles of routes were closed due to proximity of bat roosts, prairie falcon (*Falcon mexicanus*) or golden eagle (*Aquila chrysaetos*) eyries, or waters.
- BLM modified the "Stopping and Parking" section in the Motorized-Vehicle Access element of CDCA Plan such that stopping, parking, and vehicle camping are allowed within 300 feet from the centerline of an approved route except within sensitive areas (such as ACECs) where the limit would be 100 feet. Stopping, parking, and vehicle camping would be allowed no more than 100 feet from the centerline of a route within DWMAs.

Imperial Sand Dunes Recreation Area Management Plan

The Imperial Sand Dunes RAMP ROD (BLM 2013a) identifies goals and objectives and management actions for Transportation and Public Access (Travel Management). The goals and objectives for Transportation and Public Access under the ISD RAMP are described on page 2-94 and page 2-101 (Routes of Travel) of the ROD, and include:

- Ensure that the BLM minimizes impacts to identified sensitive cultural, natural, biological, and visual resources.

- Ensure that the BLM continues to provide essential motorized access to nonfederal lands, prior existing rights on BLM lands, and private in-holdings surrounded by BLM lands.
- Ensure that the BLM continues to provide adequate motorized access for the maintenance of wildlife guzzlers and for dispersed recreation activities such as hunting.
- Ensure that the BLM provides for a wide variety of recreational opportunities (e.g., hiking, OHV recreation, horseback riding, and commercial activities).
- Reduce or halt the unauthorized incursions into closed areas.

In summary, the management actions contained within the ISD RAMP include:

- Designate all BLM-administered public lands within the planning area (ISD) as open, closed, or limited to motorized use (See Map 2-7 of the ISD RAMP ROD):
  - Open: 127,000 acres
  - Closed: 35,000 acres
  - Limited: 52,000 acres
- Designate routes of travel within the OHV limited use area surrounding and within the ISD SRMA. This includes open routes (routes available to motorized vehicles), limited routes (routes which may have additional limitations on use including vehicle size, vehicle type, and season of use), and closed routes (routes closed to motorized vehicles, including OHVs, but open to biking, hiking, and equestrian use). (See Map 2-8 of the ISD ROD.)
- Limit stopping, parking, and camping along the open routes in the Flat-Tailed Horned Lizard Management Area to within 50 feet on either side of the route centerline.
- Maintain, and where necessary, improve Wash Road.
- Allow primary motorized vehicle travel only on designated routes. Emergency vehicles may use a drivable wash to access a site. Where no roads exist, vehicles could be authorized on a case-by-case basis to travel cross-country to avoid the need for road building, with appropriate environmental analysis.
- Ensure that designated routes within the planning area are adequately signed and mapped for public use.
- Where new roads are considered in the future, roadbeds will be no wider than needed for reliable access. Proposed new roads will be considered only after appropriate environmental analysis and will use BLM specifications and best management practices to minimize impacts to resources and reduce erosion.

- Reduce vehicle incursions or trespass on closed routes or in closed areas by restoring lands to their pre-disturbance conditions as rapidly as funding permits. Sensitive resources in immediate danger or those that have been damaged by linear disturbances will be a high priority for restoration. Typically, the restoration will be limited to that portion of the route of trespass that is in line of sight from an open route. Each route will be evaluated on a case-by-case basis, and the most appropriate method of restoration will be used based on geography, topography, soils, hydrology, and vegetation.

Western Colorado Desert Routes of Travel Designations/CDCA Plan Amendment

The Western Colorado Desert Routes of Travel Designations (WECO) CDCA Plan Amendment does not establish any additional goals and objectives for travel management beyond the recreation goals in the CDCA Plan (BLM 2003). This plan amendment designates a route network for the WECO planning area, and describes under what situations camping and parking will be allowed.

II.2.2.3.2.2 Caliente Resource Management Plan

Area-wide decisions in the Caliente RMP designate all public lands as limited or closed to OHV vehicles. There are no open areas. The areas that are closed to all vehicular travel include wilderness and the Pacific Crest National Scenic Trail (BLM 1997, p. 65).

Motorized and mechanized travel on public land would be "limited" to existing mapped or maintained roads and trails or designated routes of travel, with the exception of the following areas that would be managed as closed to all travel (except foot and equestrian): Point Sal, Blue Ridge, Short Canyon, Cholla Canyon, Cane Canyon, and the Pacific Crest National Scenic Trail. Caliente Mountain Ridge Road would be closed to motorized vehicles but open for mechanized travel. Salt Creek would be closed to motorized travel, but only until an ACEC plan addressing public access is completed. Designated routes of travel would be posted and include roads and trails shown on surface management maps. Existing roads and designated routes may be closed to protect resources following public notification; use of closed roads may be allowed by the authorized officer.

Except as otherwise noted, travel is allowed on existing roads and trails which appear on BLM Surface Management maps, aerial photographs, and U.S. Geological Survey topographical maps at the time this plan is approved. Routes are considered to be open unless indicated as closed on the ground by signs, barricades, or other physical considerations which appropriately direct the user. All authorized public land users that hold a special authorization (i.e., grazing permittees, ROW holders, mining claimants) may drive off road if their authorization allows. Emergency services and/or law enforcement

activities are exceptions to these policies. Administrative access may be granted by the authorized officer to individuals requiring such access for official business (pp. 65–66).

Except for areas closed to all vehicles, the use of mountain bicycles is allowed on all roads and trails available to pedestrians. Bicycles are not allowed to travel off road (p. 65).

II.2.2.3.2.3 Bishop Resource Management Plan

The Bishop RMP ROD SOPs for Recreation include the following (BLM 1993, p. 14):

- All BLM land will be designated as closed, limited, or open to OHV use. (See page 17 of the Bishop RMP.)
- OHV use will be monitored throughout the resource area. Monitoring efforts will be concentrated in ACECs, WSAs, other specially designated areas, and areas incurring resource impacts. Mitigation, where needed, will be applied to eliminate or reduce resource problems caused by OHV use.
- Some seasonal closures will be designated in the resource area in OHV management plans. Snowmobile use will be limited to designated areas and routes.

II.2.2.3.2.4 Solar Programmatic Environmental Impact Statement

The ROD for the Solar PEIS (BLM 2012a) amended land use allocation decisions and utility-scale transmission decisions within 89 plans in 6 southwestern states, including the CDCA Plan, the Bishop RMP, and the Caliente RMP. The Solar PEIS ROD does not contain programmatic design features specifically addressing comprehensive trails and travel management (BLM 2012a).

II.2.2.3.3 Cultural Resources and Tribal Interest

II.2.2.3.3.1 California Desert Conservation Area Plan, as Amended

The goals and objectives for Cultural Resources under the CDCA Plan are described on page 22 (Cultural Resource Element; BLM 1999) and include:

- Broaden the archaeological and historical knowledge of the CDCA through continuing inventory efforts and the use of existing data. Continue the effort to identify the full array of the CDCA's cultural resources.
- Preserve and protect representative sample of the full array of the CDCA's cultural resources.
- Ensure that cultural resources are given full consideration in land use planning and management decisions, and ensure that BLM authorized actions avoid inadvertent impacts.

- Ensure proper data recovery of significant (National Register quality) cultural resources where adverse impacts can be avoided.

In summary, the applicable Cultural Resource Element management actions contained within the CDCA Plan include:

- Recognition of 47 ACECs and other special systems designations that recognize prehistoric and historic resources.
- Preservation and Protection through a variety of management tools, including Cultural Resources Management Plans, environmental awareness/education, surveillance, stabilization, restoration, and road designation.
- Monitoring of resource locations to determine types and extent of impacts on archaeological sites caused by multiple-use class designation as well as impacts from consumptive uses and natural processes.
- Inventory of more portions of the CDCA to improve knowledge and management of the cultural resources in the desert.
- Mitigation Plans when resources cannot be protected and/or preserved. Plans will detail steps necessary to recover the resources and otherwise ameliorate the impacts. A list of priority areas for cultural resource mitigation planning is presented in Appendix VII to the proposed CDCA Plan (October 1980).
- Encouragement and support of archaeological, ethnographic, and historical research especially in high-impact risk areas, as in MUCs M and I.
- Review of prehistoric and historic undertakings and report and coordination with the California State Historic Preservation Office and Advisory Council on Historic Preservation.
- Within all MUCs, archaeological values will be preserved and protected. Procedures described in 36 CFR 800 will be followed as described in BLM's National Programmatic Agreement and State Protocol. The goals and objectives for Tribal Interests under the CDCA Plan are described on page 26 (Native American Element), and include:
    - Identify Native American values through regular contact and consultation with tribal entities and/or individuals, consistent with policy.
    - Give full consideration to Native American values in land use planning and management decisions, consistent with statute, regulation and policy.
    - Manage and protect Native American values wherever prudent and feasible.

In summary, the Native American Element management actions contained within the CDCA Plan include:

- Management, protection, and enhancement of Native American cultural values and the resources with which they are associated. Components of the MUC guidelines, plan guidelines, and other plan elements incorporate Native American concerns.
- ACECs provide a tool for dealing specifically with sensitive resources of Native American value that are exposed to a high risk adverse impact.
- For all MUCs, Native American cultural and religious values will be preserved where relevant and protected where applicable. Native American group(s) shall be consulted.

West Mojave Plan/CDCA Plan Amendment

There are no goals and objectives or management actions specifically identified for this resource under the WEMO.

Northern and Eastern Mojave Desert Management Plan/CDCA Plan Amendment

There are no goals and objectives or management actions specifically identified for this resource under the NEMO.

Northern and Eastern Colorado Desert/CDCA Plan Amendment

The NECO RMP does not include goals and objectives for Cultural Resources.

The management actions for cultural resources include (BLM 2002b):

- BLM proposed an amendment to the CDCA Programmatic Agreement between BLM and California State Historical Preservation Office (SHPO) to formalize implementation of a phased cultural resource strategy for routes of travel. Specifically the amendment would:
  - Define the nature of undertaking and level of effort necessary to address effects on historic and cultural resources.
  - Allow designation of routes to proceed.
  - Provide phased identification and evaluation of historical and cultural sites over a specified period of time in consultation with SHPO, interested persons, and tribal entities.
  - Provide remedies (route closure, mitigation) when eligible historical and cultural resources would be affected.

Imperial Sand Dunes Recreation Area Management Plan

The goals and objectives for Cultural Resources and Tribal Interest under the ISD RAMP are described on page 2-54 of the ROD (BLM 2013a):

In summary, the management actions contained within the ISD RAMP include:

- Current legal, regulatory, and policy direction concerning cultural resources exists to protect and preserve these national heritage assets, as well as support development of literature, interpretive sites, and other forms of public education designed to increase knowledge, understanding, and enjoyment of these irreplaceable resources. Legal protection, physical preservation and restoration, documentation, and access by scientists and the general public are regulated by federal law. The electronic management and archiving of cultural data are vital to the management of these resources. The management actions presented here are a result of the need to update the existing plan and incorporate current legislation and policy direction for the management of cultural resources.
- Maintain current cultural resource data in a GIS [geographic information system] format and increase knowledge of cultural resources within the planning area through proactive surveys. The inventory will include a prioritized list (high/medium/low sensitivity) of areas for future inventory—based on sensitivity and the likelihood of significant, unrecorded sites. Inventory strategies for unsurveyed areas will be continually refined.
- Work cooperatively with the California SHPO on data sharing and information management, and the promotion and enhancement of public education, including Archaeological Awareness Week/Historic Preservation Month, outreach, and stewardship programs.
- Provide for and/or increase interpretive educational opportunities at selected cultural and historic sites, including the Plank Road (CA-IMP-4764H). Work with communities, Tribes, interested individuals, and other agencies to enhance public understanding, appreciation, and enjoyment of cultural resources.
- Implement protection measures to stop, limit, or repair damage to sites that are on or eligible for the National Register of Historic Places. A variety of protection measures, described in BLM Manual 8140, may be used to protect the integrity of sites at risk and will include signing, fencing or barriers, trash removal, erosion control, backfilling, repairing, shoring up or stabilizing structures, restricting uses and access, and closures. Where feasible, acquire non-BLM-administered properties within the planning area that contain significant cultural resources including, but not limited to, those properties listed or eligible for listing in the National Register of Historic Places.
- Manage spiritually significant and traditional cultural properties in consultation with Native American Tribes, accommodate Tribal access to spiritually significant

and traditional cultural properties, and prevent physical damage or intrusions that might impede their use by religious practitioners (pursuant to Executive Order 13007 and American Indian Religious Freedom Act [42 U.S.C. 1996]). The locations of spiritually significant and traditional cultural properties and other places of traditional or religious importance to Native American Tribes will be kept confidential to the extent allowed by law.

- Coordinate with Native Americans to manage harvesting areas for the collection of medicinal herbs, ceremonial herbs, other vegetation, and/or minerals for traditional or ceremonial use (see Section 2.12.4—Vegetative Use Authorization and Appendix G of the ISD RAMP for more information).
- Evaluate and allocate cultural properties (including cultural landscapes) to one of six uses as outlined in BLM's Land Use Planning Handbook (H-1601-1) and BLM-IB No. 2002-101—Cultural Resource Considerations in Resource Management Plans.

II.2.2.3.3.2 Caliente Resource Management Plan

The Caliente RMP identifies the Walker Pass National Historic Landmark as a Special Management Area to be managed to protect the characteristics of the natural landscape and viewshed of the pass which contributed towards its designation as a national historic landmark (BLM 1997, p. 156).

II.2.2.3.3.3 Bishop Resource Management Plan

The Bishop RMP ROD identifies the following laws and policies that guide planning and implementation of the RMP (BLM 1993, p. 9):

- The BLM will comply with the provisions of Sections 106 and 110 of the Historic Preservation Act including consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation for actions which may affect prehistoric and historic properties.
- The BLM will consult with local Indian communities to identify their concerns when projects might affect them. These concerns will be considered in the decision making process.

The Bishop RMP also includes the area-wide decision (p. 22):

- Manage cultural resources for information potential by initiating data recovery at threatened sites.

II.2.2.3.3.4 Solar Programmatic Environmental Impact Statement

The 2012 ROD for the Solar PEIS amended land use allocation decisions and utility-scale transmission decisions within 89 plans in 6 southwestern states, including the CDCA Plan, the Bishop RMP, and the Caliente RMP (BLM 2012a). Amendments to the CDCA specific to Cultural Resources include amending land use plans with programmatic design features that would be required for all utility-scale solar energy projects on BLM-administered land including (p. 110):

- Exclusions under the BLM's Solar Energy Program include traditional cultural properties and Native American sacred sites as identified through consultation with tribes and recognized by the BLM.
- Early consultation with BLM regarding identifying and minimizing cultural resources and BLM consultation with federal, tribal, state, and local agencies.
- Siting, designing, and constructing solar facilities to minimize impacts on cultural resources including encouraging use of previously disturbed lands.
- Monitoring terms and conditions for cultural resources by project developer including consultation with BLM.
- Prior to reclamation, BLM may require additional planning for treatment of historic properties.
- Notifications of BLM prior to demolition or substantial alteration of any building or structure.
- Soil-disturbing reclamation and decommissioning activities will be limited to previously disturbed areas.
- California SEZ-specific design features for cultural resources and tribal concerns.

Amendments to the CDCA specific to Native American concerns include amending land use plans with programmatic design features that would be required for all utility-scale solar energy projects on BLM-administered land including (p. 114):

- Early consultation with federally recognized tribes to identify issues and areas of concern regarding proposed solar energy projects.
- Training of personnel whose activities could affect issues and areas of concern to federally recognized tribes.
- Ongoing consultation with tribes during life of the project.
- Returning the site to its pre-construction condition.

II.2.2.3.4 Paleontology

II.2.2.3.4.1 California Desert Conservation Area Plan, as Amended

The goals and objectives for Paleontology under the CDCA Plan are described on page 22 (BLM 1999) and include:

- Ensure that paleontological resources are given full consideration in land use planning and in management decisions.
- Preserve and protect a representative sample of the full array of the CDCA's paleontological resources.
- Ensure proper data recovery of significant paleontological resources where adverse impacts cannot be avoided or otherwise mitigated.

In summary, the applicable Cultural Resource Element management actions related to paleontology contained within the CDCA Plan include:

- Manage paleontological resources within the CDCA to maximize their protection, systematic and scientific material recovery, and the development of educational and interpretive programs.
- Recognition of four paleontological ACECs.
- Preservation and Protection through a variety of management tools, including Cultural Resources Management Plans, environmental awareness/education, surveillance, stabilization, restoration, and road designation.
- Monitor resource locations to determine types and extent of impacts on paleontological resources caused by MUC designation as well as impacts from consumptive uses and natural processes.
- Develop mitigation plans when resources cannot be protected and/or preserved. Plans will detail steps necessary to recover the resources and otherwise ameliorate the impacts.
- Preserve and protect paleontological values within all MUCs.
- Encourage and support paleontological research especially in high-impact risk areas, as in MUCs M and I.

West Mojave Plan/CDCA Plan Amendment:

There are no goals and objectives or management actions specifically identified for this resource under the WEMO.

Northern and Eastern Mojave Desert Management Plan/CDCA Plan Amendment

There are no goals and objectives or management actions specifically identified for this resource under the NEMO.

Northern and Eastern Colorado Desert/CDCA Plan Amendment

The NECO RMP does not include goals and objectives and management actions for Paleontology.

Imperial Sand Dunes Recreation Area Management Plan

The goals and objectives for Paleontology under the ISD RAMP are described on page 2-58 of the ROD (BLM 2013a) and include:

- Protect and conserve significant paleontological resources as they are discovered on public lands.
- Manage paleontological resources in ways that prioritize research needs, facilitate educational and recreational needs, and protect important sites.
- Develop specific objectives and management actions for fossil localities, when paleontological resources are discovered in the planning area.

In summary, the management actions contained within the ISD RAMP include:

- Evaluate paleontological resources as they are discovered, considering their scientific, educational, and recreational values. Identify appropriate objectives, management actions, and allowable uses for fossil localities as they are found.
- Restrict the collection of all vertebrate fossils and invertebrate and plant fossils of paleontological interest to legitimate scientific or educational uses in accordance with permitting procedures.
- Allow recreational collecting of common invertebrate and plant paleontological resources, in accordance with the Paleontological Resources Preservation Act.
- Require immediate notification should paleontological resources be encountered during project surface-disturbing activities, and cease work in the area of the discovery. Work may not resume until the BLM issues a written authorization to proceed.
- Although all lands within the planning area have been classified as Potential Fossil Yield Classification (PFYC) Class 2 (low likelihood for sensitive fossils), a field survey by a qualified paleontologist may be required if future information determines or indicates the presence of important paleontological resources prior

to surface-disturbing activities. Management prescriptions for resource preservation and conservation through controlled access or special management designation could be considered. Surface-disturbing activities may require an assessment in PFYC Class 2 areas to determine further courses of action. Assessment or mitigation in PFYC Class 1 areas will not be required except in very rare circumstances.

II.2.2.3.4.2 Caliente Resource Management Plan

There are no goals and objectives or management actions specifically identified for this resource under the Caliente RMP.

II.2.2.3.4.3 Bishop Resource Management Plan

There are no goals and objectives or management actions specifically identified for this resource under the Bishop RMP.

II.2.2.3.4.4 Solar Programmatic Environmental Impact Statement

The 2012 ROD for the Solar PEIS (BLM 2012a) amended land use allocation decisions and utility-scale transmission decisions within 89 plans in 6 southwestern states, including the CDCA Plan, the Bishop RMP, and the Caliente RMP. Amendments to the CDCA specific to Paleontological Resources include amending land use plans with programmatic design features that would be required for all utility-scale solar energy projects on BLM-administered land including (p. 108):

- Early consultation with BLM regarding identifying and minimizing paleontological resources.
- Developers shall use qualified paleontological monitor during exaction and earth-moving activities in areas with high potential for paleontological resources.
- Developers shall notify BLM immediately upon discovery of fossils and halt work until qualified personnel can visit the site, determine the significance, and make site-specific recommendations. The area of the discovery shall be protected to ensure that the fossils are not removed, handled, altered, or damaged until the site is properly evaluated and further action determined.

II.2.2.3.5 Lands and Realty

II.2.2.3.5.1 California Desert Conservation Area Plan, as Amended

The goals and objectives for Lands and Realty under the CDCA Plan are described on page 93 (Energy Production and Utility Corridors) and page 97 (Land Tenure Adjustments Goals) of the plan (BLM 1999) and include the following.

Energy Production and Utility Corridors

- Fully implement the network of joint-use planning corridors to meet projected utility needs to the year 2000.
- Identify environmental constraints and siting procedures that can be used desert-wide by telecommunications firms and public agencies to guide their planning of both individual communication sites and line-of-sight communication systems.
- Identify potential sites for geothermal development, wind energy parks, and power plants.

Land Tenure Adjustment

- Establish a land tenure program that complements the goals of other Desert Plan elements through the consolidation of public lands within special management areas, such as ACECs, intensive use recreation areas, and MUC C areas.
- Initiate a program for the disposal of public land through sale and exchange within the "Unclassified" areas of the CDCA to reduce inefficient management of isolated and fragmented parcels.
- Sell, exchange, or lease public lands to meet the needs of other governmental agencies for public facilities such as parks, recreation areas, refuse disposal sites.
- Cooperate with other public agencies at all levels to insure that locally adopted land use plans are considered in any land tenure action.

In summary, the management actions contained within the CDCA Plan include:

- All of the lands in the CDCA Plan under BLM management, except for a few scattered parcels (approximately 285,000 acres), have been designated geographically into MUCs. The CDCA Plan identified four MUCs (identified on page 13 of the Plan) which were based on the sensitive of resources and kinds of uses for each geographic area. Each MUC described a different type and level of degree of use permitted within that geographical area. The MUC guidelines described land use and resource management guidelines for 19 land uses and resources as they applied to each class (Table 1, page 15 of the plan).

Table II.2-12
Existing Multiple Use Classes in the CDCA as Amended
(acreage includes major amendments listed below)

Multiple Use Class	Acres in BLM Ownership
Class C (controlled)	2,759,000
Class I (intensive)	554,000
Class L (limited)	3,915,000
Class M (moderate)	2,285,000
Unclassified	243,000
Total	**9,756,000**

- Land Tenure Adjustments for all MUCs will be acquired, disposed of, or exchanges in accordance with FLPMA.
  - Within MUC C and L lands, public lands will not be sold.
  - Within MUC M and Unclassified lands, sale of public lands may be allowed in accordance with FLPMA and other applicable federal laws and regulations. Sales in WSA will not be allowed until after Congressional action.
  - Within MUC I lands, public lands will not be sold.
- ROWs, electrical generation facilities, new transmission, and distribution facilities are permitted based on the MUC.
  - MUC C lands do not allow electrical generation facilities, wind energy facilities, solar energy facilities, and geothermal facilities, new transmission or distribution facilities or communication sites; and allow maintenance of existing transmission facilities and communication sites subject to wilderness management plans.
  - MUC L lands do not allow new nuclear generation facilities; MUC L lands allow new electrical generation facilities, wind energy facilities, solar energy facilities, geothermal facilities, and communication sites if NEPA is met; MUC L allows new transmission facilities if within designated corridors and new distribution facilities (with design constraints).
  - MUCs M and I allow all these actions if NEPA requirements are met; however,
    - New transmission facilities are only allowed within corridors.
    - Existing transmission facilities within designated corridors may be maintained and upgraded; existing facilities outside designated corridors may be maintained by not upgraded or improved

  - New distribution facilities may be allowed and shall be place within existing rights of way where they are reasonably feasible.

- Unclassified Lands: Scattered and isolated parcels of public lands within the CDCA which have not been placed within MUCs are unclassified land. The BLM will retain or transfer to other appropriate managing agencies those unclassified parcels containing sensitive resources. Parcels with known mineral resources will be selectively retained. Parcels which are found not to contain sensitive resources and would be better used for development purposes will be considered for disposal after appropriate inventories and consultation with local governments are completed.

Western Mohave Desert/CDCA Plan Amendment

The goals and objectives for Lands and Realty under the WEMO RMP are described on 2-29 of the plan (BLM 2006). In summary, the management actions contained within the WEMO include:

- Modification of boundaries of consolidation, retention, and disposal zones to conform with conservation area goals.
- Amendment of select MUC classes to reflect new management actions.
- Removal lands available for exchange within ACECs and change to retention.
- Land acquisition is guided by current BLM and Department of Defense acquisition priorities set by the BLM – Edwards Air Force Base land tenure adjustment strategy. This "LTA" strategy identified lands for disposal (Disposal Zone) while maintaining other lands (Retention and Consolidation Zones), the latter being located primarily in an L-shaped pattern running from north of Adelanto, to the Fremont Peak region, and then east through Superior Valley.

Northern and Eastern Mojave/CDCA Plan Amendment

The goals and objectives for Lands and Realty are under the NEMO RMP are described in on page 2-30, 2-90, and Appendix N (Strategy for Land Tenure in the NEMO planning area; BLM 2002a) and include:

> Acquire sufficient habitat. The goal is to adjust the land ownership pattern through acquisition and disposal of selected lands (1) to improve opportunities for both the management of areas and conservation of natural resources within DWMAs, WHMAs, and existing wilderness; and (2) to facilitate the use of public and private lands in areas of low natural resource values for private, commercial, or social purposes, including the opportunity for community expansion. Acquisition of Catellus and CSLC lands (as well as other private lands) in wilderness areas is a

continuing independent process requiring no specific action through the NECO planning process. All acquired lands would automatically be managed under the same criteria as the surrounding public lands.

- The objectives of adjusting the land ownership pattern are to
  - Acquire habitat within DWMAs and WHMAs (limited application in bighorn sheep corridors), to ensure long-term manageability of these areas for conservation of biological ecosystems.
  - Dispose of public lands to private ownership for community expansion where environmentally suitable.
  - Acquire lands for protection of threatened and endangered species, where prudent.

In summary, the management actions contained within the NEMO include:

- Establishing MUC for 475,000 acres of released WSAs.
- Classifying lands as "unclassified" to make them available for future disposal for the purposes of community expansion; acquisition of lands within wilderness.
- Retaining public ownership within DWMAs and WHMAs according to the guidelines of MUCs, ACECs, wilderness areas, and other federal requirements unless there is a compelling reason for disposal as determined through NEPA and land use plan amendments. The plan describes the required considerations when decisions are made to dispose of federal lands.
- Acquiring private lands would be accomplished as much as possible and practical through exchange to reduce the impact of loss of tax base to counties and only from willing sellers.
- Prioritizing acquisition of lands within designated DWMAs, WHMAs, and Wilderness Areas.
- Prioritizing acquisition of lands within critical habitat (Amargosa vole [*Microtus californicus scirpensis*]) in support of conservation and recovery.
- Assigning MUC L to all public lands within DWMAs.
- Changing landfill classifications to MUC U to make them available for disposal.
- Actively seeking to acquire lands or interests in lands within DWMAs and WHMAs (except within bighorn sheep corridors) through purchase, donation, or exchange according to scheduled priorities. In DWMAs this includes both private and CSLC lands. In WHMAs this includes only private lands. This action adds to existing policy to acquire both private and CSLC lands in wilderness areas.

- BLM would dispose of lands in areas outside wilderness, DWMAs, and WHMAs which do not containing known occurrences of rare plants, springs, bat or other special-status species, and where such action supports consolidation and location of private land to promote private development and increase tax base for local governments. Federal lands potentially suitable for disposal under this action could include lands along freeways and freeway exits; lands adjacent to urban, agricultural, and industrial centers; lands in checkerboard ownership outside other sensitive areas; lands in unclassified areas; and other lands deemed to be unmanageable under federal ownership. Although exchange would be the BLM's preferred method of disposal, the sale of lands could be considered.
- BLM would be interested in acquiring private and CSLC lands outside National Park Service (NPS) lands with known occurrences of Coachella Valley milk-vetch [*Astragalus lentiginosus* var. *coachellae*] where (1) there is a willing seller, (2) such lands would be manageable, and (3) such lands are not encumbered by highway, other ROW conflicts, or other conflicts. Acquisition would occur only where the action would be consistent with obtaining and retaining lands in federal ownership and would be consistent with current or future urban/agricultural lands uses in the Desert Center area.

Northern and Eastern Colorado Desert/CDCA Plan Amendment

The goals and objectives for Lands and Realty under the NECO RMP are described on page 2-90 of the plan (BLM 2002b) and include:

- Acquire habitat within DWMAs and WHMAs (limited application in bighorn sheep corridors), to ensure long-term manageability of these areas for conservation of biological ecosystems.
- Dispose of public lands to private ownership for community expansion where environmentally suitable.
- Acquire lands for protection of threatened and endangered species, where prudent.

In summary, the management actions contained within the NECO include:

- BLM would dispose of lands in areas outside wilderness, DWMAs, and WHMAs and not containing known occurrences of rare plants, springs, bat, or other special-status species and where such action supports consolidation and location of private land to promote private development and increases tax base for local governments.
- Federal agencies would actively seek to acquire lands or interests in lands within DWMAs and WHMAs (except within bighorn sheep corridors) through purchase, donation, or exchange according to ranked priorities.

- Land acquired through compensation or mitigation would be classified CLOSED for disposal or use.
- Designate all MUC M lands in DWMAs as MUC L.
- Acquire private and CSLC lands outside NPS with known occurrences of Coachella Valley milk-vetch.

Imperial Sand Dunes Recreation Area Management Plan

The goals and objectives for Lands and Realty under the ISD RAMP are described on pages 2-105 (Land Tenure), 2-106 (Land Use Authorizations), 2-107 (Right-of-way Permits), 2-107 (Communication Sites), 2-111 (Renewable Energy), 2-112 (Withdrawals), and 2-112 (Utility Corridors) of the ROD (BLM 2013a), and include the following.

Land Tenure

- Lands or interest in lands (including easements) to be acquired must either:
  - Facilitate access to public lands and resources.
  - Maintain or enhance public uses and values.
  - Facilitate implementation of this proposed RAMP/CDCA Plan amendment and Final EIS.
  - Provide for a more manageable land ownership pattern.
  - Include significant natural or cultural resource values.

Land Use Authorizations

- Manage recreational and commercial activities within the planning area to accommodate visitor needs, improve visitor experience, and—where consistent with management goals—allow economic benefits for local and regional communities.
- Maintain public access to BLM-administered lands through easements when needed.
- Be responsive to public demand for leases, permits, and easements on a case-by-case basis, consistent with management prescriptions.
- Land is not available for leasing for residential purposes.

Right-of-Way Permits

- Be responsive to public demand for ROWs on a case-by-case basis, consistent with management prescriptions.

Communication Sites

- When practicable, consolidate future proposed facilities within existing communication sites, consistent with management proscriptions.

Renewable Energy (Solar and Wind)

- Provide for the production and distribution of renewable energy, consistent with management of the recreation area and prescriptions.

Withdrawals

- Protect sensitive or significant natural, biological, and cultural resource and/or recreational values from disturbances relating to locatable mineral entry.

Utility Corridors

- Major ROWs within the approved corridor would be consolidated to minimize resource impacts.
- The designated corridors will be the preferred location for major utility ROWs consistent with the CDCA Plan, as amended (see Map 2-9).

In summary, the Lands and Realty management actions contained within the ISD RAMP include:

- No lands will be available for disposal within the planning area.
- Currently pending land acquisitions equal 6,603 acres.
- Manage all acquired lands in accordance with the approved land use and planning decisions for surrounding or adjacent BLM-administered lands.
- Consolidate split-estate pursuant to Sections 205 and 206 of FLPMA.
- Any lands acquired by the BLM will include both the surface and subsurface (minerals) estate when possible and will be managed in accordance with the approved land use decisions for the surrounding area.
- Consider leases, permits, and easements on a case-by-case basis to meet public demand consistent with exclusion and avoidance areas identified by alternative.
- Locate new major ROWs in designated corridors, unless an evaluation of the project shows that locating outside of a designated corridor is the only practicable alternative.
- Ensure any application for proposed facilities at existing communication sites is compatible with other uses at the site existing at the time of application.

- Consider applications for new communication sites outside the three existing sites on a case-by-case basis emphasizing co-location and subleasing of facilities, consistent with management proscriptions.
- Make land available for renewable energy development consistent with applicable laws, regulations, and policy and in accordance with the approved land use and planning decisions.
- Use BLM Wind Energy Development Program Policies and best management practices established in Attachment A of the ROD (BLM 2005) for all site-specific wind development projects.
- Use BLM's Solar PEIS ROD for all qualifying site-specific solar development projects. Projects within the Planning Area will be administered as variance lands under the policies and processes described in the Solar Programmatic EIS ROD.
- Use the State of California Best Management Practices and Guidance Manual: Desert Renewable Energy Projects, for development of renewable energy projects in the planning area. The BLM and other Renewable Energy Action Team agencies authored the manual. The BLM may modify these best management practices as necessary over time.
- Land available for lease for solar energy development within the planning area includes 27,606 acres available as variance lands; no avoidance areas; and 161,226 acres excluded (Map 2-10).
- Land available for lease for wind energy development within the planning area includes 35,115 acres available; no avoidance areas; and 153,717 acres excluded (Map 2-11).
- Seek revocation of existing withdrawals, if the land is no longer needed for the original purpose of the withdrawal. Current withdrawal lands are shown in Map 2-12.
- Continue periodic review of existing withdrawals, including other agency withdrawals, to ensure that the reasons for the withdrawal are still valid and that only the acreage needed is retained in withdrawn status.
- Continue the existing three utility corridors (one is a contingency corridor). There is one 2-mile-wide existing utility corridor along Interstate 8 on BLM-administered lands within the planning area. A second utility corridor begins in the northernmost portion of the planning area near Mammoth Wash and runs north (see Map 2-9). The contingency corridor travels along the eastern boundary of the planning area adjacent to the Union Pacific Railroad tracks (see Map 2-9).
- Locate all new major utility ROWs within the designated corridors and consisting of the following types: (1) new electrical transmission towers and cables of 161 kV or above; (2) all pipelines with diameters greater than 12 inches; (3) coaxial cables for

interstate communications; and (4) major aqueducts or canals for interbasin transfers of water.

- Avoid special designation areas and environmentally sensitive areas, where practical.

II.2.2.3.5.2 Caliente Resource Management Plan

The Caliente RMP does not include goals and objectives for the Lands and Realty program.

In summary, the management actions contained within the Caliente RMP (BLM 1997) include the following, by management area.

Plan-Wide Land Decisions

- All existing or occupied utility corridors delineated in the Western Regional Corridor Study of 1986 are designated as utility corridors.
- Mineral Estate (Split-Estate) Lands are suitable for disposal. Mineral Estate lands patented by RPPA and STA would be managed consistent with county zoning requirements.
- Manage newly recognized lands consistent with adjacent public lands.
- Lands are unsuitable for entry under DLE and IAA.

South Sierra Management Decisions

- Approximately 113,500 acres (160 parcels) would be identified for local repositioning through land exchanges to consolidate natural resource values and meet the management objectives of this plan. Special emphasis would be placed on repositioning to enhance wilderness values, recreation, and special plant communities, and to meet local community needs.
- Approximately 53,540 acres would be targeted for Cooperative Management with other federal and state agencies (U.S. Forest Service, USFWS or CDFW, NPS, Bureau of Indian Affairs, California Department of Parks and Recreation). Of this, approximately 1,300 acres within the DRECP Plan Area were identified for cooperative management with the California Department of Parks and Recreation in the Horse Canyon/Sand Canyon.

II.2.2.3.5.3 Bishop Resource Management Plan

The Bishop RMP ROD identifies the following SOPs for Realty (BLM 1993, p. 14):

- A site-specific environmental assessment will be required before any disposal of BLM land. Only parcels identified in the RMP will be available for disposal. All other BLM lands will be retained in public ownership.

- All existing and future power lines must meet nonelectrocution standards for raptors. Raptor habitat enhancement will be incorporated into facility design where feasible.

The Bishop RMP also includes the following area-wide decisions applicable to lands and realty within the DRECP Area (p. 16):

- Unless otherwise stated in the plan, all BLM lands will be retained in public ownership. Lands identified for disposal are either difficult or uneconomic to manage and would best serve the public interest in private ownership. Land disposal may also be used to resolve inadvertent occupancy trespass (cases where survey error has resulted in home construction on BLM land). BLM lands will not be available for disposal under the agricultural land laws.
- Land exchange is the preferred method of disposal. Where land exchange is impractical, lands identified for disposal may be sold under authority of FLPMA.
- Disposals to resolve inadvertent occupancy trespass will be limited to the smallest legal subdivision which includes the private development.
- Recreation and Public Purposes Act patents may be issued on lands identified for disposal.

Bishop RMP area-wide decisions designated north–south utility corridors along existing transmission lines, as follows (p. 16):

- Utility corridors 0.50 mile wide are designated along the following transmission lines:
  - The 500 kV DC Intertie from where it enters California near State Highway 167 to where it exits the resource area near Olancha.
  - The 115 kV Southern California Edison Double Circuit Line from the Bishop Substation to where it exits the resource area near Olancha.
- The following conditions and mitigation measures apply to these corridors:
  1. Corridors extend 0.25 mile on both sides of the specified lines with two exceptions, both outside the DRECP Area.
  2. Future facilities in these corridors may be allowed to exceed Visual Resource Management (VRM) and Yearlong Protection standards. Extensive mitigation will be required and may include, but is not limited to:
     a. Painting and use of non-specular steel materials to reduce visibility.
     b. Requiring the use of shared facilities.

The first applicant for a ROW in either corridor will be required to conduct a study to determine how many transmission lines the corridor can accommodate.

II.2.2.3.5.4 Solar Programmatic Environmental Impact Statement

The 2012 ROD for the Solar PEIS (BLM 2012a) amended land use allocation decisions and utility-scale transmission decisions within 89 plans in 6 southwestern states, including the CDCA Plan, the Bishop RMP, and the Caliente RMP. Amendments to the CDCA specific to Lands and Realty include:

- Specific land use allocation for Solar Exclusion Areas (closed to solar)
- Specific land use allocations for SEZs (open to solar and incentivized, Section B.4.3); CDCA Amendment: Riverside East and Imperial East SEZs
- Processes for expanding or including new SEZs (B.4.5)
- Specific land use allocations for Solar Variance Lands (open to solar, with environmental considerations and policies)
- Programmatic Design Features for Lands and Realty (among other resources) and SEZ-specific design features
- Programmatic Policies for Utility-Scale Solar Development
- Public Lands within designated SEZs are withdrawn for a 20-year duration pursuant to Public Land Order (June 27, 2013) subject to valid existing rights, from settlement, sale, location, or entry under the general land laws, including the mining laws, as follows:
    - New mining claims cannot be filed on the withdrawn lands; however, valid mining claims filed prior to the date the lands were segregated (i.e., the date withdrawal notice was published in the *Federal Register*) would take precedence over future solar energy development ROW application filings.
    - Lands cannot be sold, exchanged, or otherwise disposed of during the term of the withdrawal.
    - Withdrawn lands remain open to mineral leasing, geothermal leasing, and mineral material laws; the BLM could elect to lease the oil, gas, coal, or geothermal steam resources, or to sell common-variety mineral materials, such as sand and gravel, if the authorized officer determined there would be no unacceptable impacts on future solar energy development.
    - Withdrawn lands remain open to ROW authorizations and land leases or permits authorized under Section 302 of the FLPMA.

II.2.2.3.6 Livestock Grazing

II.2.2.3.6.1 California Desert Conservation Area Plan, as Amended

The goals and objectives for livestock grazing under the CDCA Plan are described on page 56 (Livestock Grazing; BLM 1999) and include:

- Use range management to maintain or improve vegetation to meet livestock needs and to meet other management objectives sit forth in the plan.
- Continue the use of the California Desert for livestock production to contribute to satisfying the need for food and fiber from public land.
- Maintain good and excellent range condition and improve poor and fair range condition by one condition class, through development and implementation of feasible grazing systems or Allotment Management Plans. Adjust livestock use where monitoring data indicate changes are necessary to meet resource objectives.

In summary, the management actions contained within the CDCA Plan include:

- Allocation of animal unit months for perennial forage for livestock on existing allotments designated and perennial and ephemeral/perennial, and use of ephemeral forages as it becomes available. Allotments will be managed accordingly as required by the Allotment Management Plans and include establishment of appropriate stocking levels, seasons of use, turnout times, levels of forage use, monitoring and adjustment procedures, watering and handling practices, and range improvements.
- Review and adjust forage allotments if monitoring indicates the need.
- Incorporate range improvements including elements such as fencing, water pipeline, wells, spring developments, catchments, and troughs.
- Base turnout dates on the emergence of tortoise in habitat. Riparian habitats will be protected either by fencing or by ensuring proper use levels.
- Manage grazing based on MUCs:
    - MUC C:
        - Grazing will be allowed subject to limitations to preserve wilderness characteristics and the protection of sensitive resources, except that existing grazing will only be subject to the protection of sensitive resources.
        - Major support facilities, such as permanent corrals, loading chutes, and significant water developments, will not be allowed except for existing facilities pursuant to valid existing leases, licenses, and permits. Maintenance of such facilities will be controlled to prevent unnecessary or undue degradation of wilderness values.
        - Manipulation of vegetation by chemical or mechanical means will not be allowed.

- MUC L:
  - Grazing will be allowed subject to the protection of sensitive resources.
  - Support facilities such as corrals, loading chutes, water developments, and other facilities, permanent or temporary, may be allowed consistent with protection of sensitive resources.
  - Manipulation of vegetation by chemical or mechanical means will not be allowed, except for site-specific needs.
- MUCs M and I:
  - Grazing will be allowed subject to protection of sensitive resources.
  - Support facilities, such as corrals, loading chutes, water developments, and other facilities, permanent or temporary, will be allowed.
  - Manipulation of vegetation by chemical or mechanical means may be allowed and may be designed, development, and managed for intensive livestock use.

West Mojave Plan/CDCA Plan Amendment

The WEMO recommended the establishment of Regional Standards for Public Land Health and set forth guidelines for grazing management (BLM 2006). Until these standards are approved by the Secretary of the Interior, these lands continue to be managed under the fallback standards specified at 43 CFR Part 4100.

In summary, the management actions contained within the WEMO include:

- Prescriptions governing utilization of key perennial species by livestock in continuous year-long operations.
- Specific prescriptions for all cattle allotments managed by the BLM in the planning area that are not located within either desert tortoise habitat or the Mohave Ground Squirrel Conservation Area, including conducting Health Assessments and implementing corrective actions as needed.
- Specific prescriptions for all cattle allotments managed by the BLM in the planning area that are located within either desert tortoise habitat or the Mohave Ground Squirrel Conservation Area. These include management prescriptions from existing Biological Opinions as well as allotment boundary modifications, changes in livestock kind and use designations at select locations, and specific measures to minimize and prevent adverse effects to tortoises.

- Specific prescriptions for sheep grazing including minimum ephemeral forage that must be present before sheep can be turned out, limits to the number of sheep in a combined band, Health Assessments for all allotments available for grazing (except for allotments that will be excluded from grazing), and restrictions on sheep grazing in the Mohave Ground Squirrel Conservation Area.
- Exclusion of grazing from select locations that support target species.

Northern and Eastern Mojave Desert Management Plan/CDCA Plan Amendment

The NEMO recommended the establishment of Regional Standards for Public Land Health and set forth guidelines for grazing management (BLM 2002a). Until these standards are approved by the Secretary of the Interior, these lands continue to be managed under the fallback standards specified at 43 CFR Part 4100.

In summary, the management actions contained within the NEMO include:

- Recommend the establishment of Regional Standards for Public Land Health and set forth guidelines for grazing management. Until these Standards are approved by the Secretary of the Interior, these lands continue to be managed under the fallback standards specified at 43 CFR Part 4100.

Northern and Eastern Colorado Desert/CDCA Plan Amendment

The NECO recommended the establishment of Regional Standards for Public Land Health and set forth guidelines for grazing management (BLM 2002b). Until these standards are approved by the Secretary of the Interior, these lands continue to be managed under the fallback standards specified at 43 CFR Part 4100.

In summary, the management actions contained within the NECO included:

- Locating facilities away from riparian-wetland areas when they conflict with achieving the riparian-wetland functions.
- Design development of springs and seeps or other water affecting projects to protect ecological functions and processes.
- New range improvement facilities and supplements would be located away from wetland systems.
- Management practices would maintain and promote perennial stream channel morphology and functions appropriate to climate and land form.
- Grazing management practices must meet state and federal water quality standards.

- In the CDCA, all wildfires in grazing allotments would be suppressed. To restore degraded habitats infested with invasive weeds, prescribed burning may be used.
- When weather results in extraordinary conditions, seed germination, seedling establishment, and native plant species growth would be allowed by modifying grazing use.
- Grazing on designated ephemeral rangeland would be allowed only if reliable estimates of production have been made, an identified level of annual growth or residue to remain on site at the end of the grazing season has been established, and adverse effects on perennial species are avoided.
- During prolonged drought, range stocking would be reduced.
- The extent of invasive and/or exotic plants and animals would be recorded and evaluated for future control measures.
- Methods and prescriptions would be implemented, and an evaluation would be completed to ascertain future control measures.
- Habitats would be restored, maintained, or enhanced to assist in the recovery of federally listed threatened and endangered species.
- Grazing activities would support biological diversity across the landscape, and native species and microbiotic crusts are to be maintained.
- Experimental research efforts would be encouraged to provide answers to grazing management and related resource concerns through cooperative and collaborative efforts with outside agencies, groups, and entities.
- Livestock utilization limits of key perennial species would follow guidelines established in this RMP.

Imperial Sand Dunes Recreation Area Management Plan

There are no goals and objectives or management actions specifically identified for Livestock Grazing under the ISD RAMP because there are no grazing allotments with the ISD. The ISD RAMP does include goals and objectives, and management actions for Land Health Standards Management, which are described starting on page 2-18 of the ROD (BLM 2013a), and are incorporated by reference. Until these standards are approved by the Secretary of the Interior, these lands continue to be managed under the fallback standards specified at 43 CFR Part 4100.

II.2.2.3.6.2 Caliente Resource Management Plan

The goals and objectives for Livestock Grazing under the Caliente RMP are described on pages 17 and 20 of the RMP (BLM 1997) and include:

- In the South Sierra Management Area, assist in the maintenance of rural lifestyles and economies of local communities by providing for livestock grazing, community infrastructure needs, and a range of dispersed recreational opportunities.

The ROD, Central California Standards and Guidelines for Livestock Grazing (2000) amended the RMP.

In summary, the management actions contained within the Caliente RMP include the following, by management area.

Plan-Wide Land Decisions

- Livestock grazing would be managed under the standards, guidelines, and criteria described in RMP Chapter 6. These standards and guidelines will be modified as necessary to maintain consistency with those adopted in the ROD for the Rangeland Health Standards and Guidelines EIS. Grazing authorizations, including class of livestock and season of use, may be modified to meet these standards and to meet the needs of the grazing operation.
- Allocations for new grazing allotments would be handled on a case-by-case basis following the criteria listed in RMP Chapter 6. Mulch, utilization, and seasonal use restrictions would be consistent with guidelines used for existing allotments found in RMP Chapter 6.
- Grazing treatments that are occurring as a part of research may be modified to reflect the needs of the study and may not conform with the guidelines in RMP Chapter 6.
- Grazing lessees and permittees whose allotments include lands identified in this plan as being available for potential land tenure adjustments are hereby notified, as required by 43 CFR 4110.4-2(b), of the proposed disposal of those properties.

South Sierra Management Decisions

- Approximately 220,800 acres of the public land within the Sierra Management Area would be available for livestock grazing. Of this figure, 188,400 acres lie within existing allotments, and 32,400 acres are currently unalloted and available for application for livestock grazing. The remainder of the management area, approximately 55,200 acres, would be classified as unavailable for livestock grazing.
    - Unalloted lands which have known sensitive resource concerns would be considered closed to new grazing authorizations.

- Unalloted lands which are inaccessible to livestock due to heavy brush, steep slopes, rough terrain, or are too far from water sources are considered unsuitable for new grazing authorizations.

- Livestock grazing would continue to be authorized on 188,400 acres of public land in 53 allotments at levels shown in RMP Chapter 6.
- New grazing applications may be authorized if residual impacts to sensitive resources are not significant. Applications for new grazing allotments would be evaluated on a case-by-case basis following the criteria listed in RMP Chapter 6. Mulch, utilization, and seasonal use restrictions would be consistent with guidelines used for existing allotments found in RMP Chapter 6.

II.2.2.3.6.3 Bishop Resource Management Plan

Bishop RMP SOPs for Livestock Grazing are described on pages 10–12 of the ROD (BLM 1993).

They address grazing systems, grazing management practices, and range improvement project development. The ROD, Central California Standards and Guidelines for Livestock Grazing (2000) amended the RMP and are listed in the previous discussion for the Caliente RMP. Following this, the Bishop Field Office conducted Environmental Assessments and issued subsequent decisions resulting in fully processed 10-year grazing permits for all allotments within the DRECP Area. The Bishop RMP also specifies which lands are allocated (allotted) to permitted livestock grazing and prescribes the mandatory terms and conditions for all allotments administered by the Bishop Field Office.

II.2.2.3.6.4 Solar Programmatic Environmental Impact Statement

The adoption of the 2012 ROD for the Solar PEIS (BLM 2012a) amended land use allocation decisions and utility-scale transmission decisions within 89 plans in 6 southwestern states, including the CDCA Plan, the Bishop RMP, and the Caliente RMP. Amendments to the CDCA specific to grazing include amending land use plans with programmatic design features that would be required for all utility-scale solar energy projects on BLM-administered land including:

- Early consultation with the BLM to identify activities that could impact rangeland resources and grazing (p. 56).
- Construct, improve, and maintain roads to minimize impacts on grazing.

II.2.2.3.7 Minerals

II.2.2.3.7.1 California Desert Conservation Area Plan, as Amended

The goals and objectives for Minerals under the CDCA Plan are described on page 84 (Geology, Energy and Mineral Resources Element; BLM 1999) and include:

- Within the multiple-use management framework, assure the availability of known mineral resource lands for exploration and development.
- Encourage the development of mineral resources in a manner which satisfies national and local needs and provides for economically and environmentally sound exploration, extraction, and reclamation processes.
- Develop a mineral resource inventory, Geology, Energy, and Mineral database, and professional, technical, and managerial staff knowledgeable in mineral exploration and development.

In addition, specific objectives of the element are to:

- Continue to recognize ways of access and opportunities for exploration and development on public lands which are assessed to have potential for critical mineral resources, those minerals of national defense importance, those of which the U.S. imports 50% or more, and those of which the U.S. is a net exporter.
- Continue to recognize ways of access and opportunities for exploration and development on public lands which are assessed to have potential for energy mineral resources. These are geothermal, oil, gas, uranium, and thorium, considered to be paramount priorities both nationally and within the State of California.
- Continue to recognize ways of access and opportunities for exploration and development on public lands which are assessed to have potential for mineral resources of local and state importance. These are sand and gravel, limestone, gypsum, iron, specialty clays, and zeolites. (Since the analysis was made in June 1980, zeolites have become of national importance.)

In summary, the management actions contained within the CDCA Plan include:

- Maintain an accurate and comprehensive information base of mineral resources in the CDCA.
- All mineral exploration and mining operations on public lands under BLM surface administration in MUCs C, L, M, and I will be subject to the BLM's surface-mining regulations under 43 CFR 3802 and 43 CFR 3809. This includes regulating to prevent "undue degradation" of public lands and to provide environmental safeguards. Regulations incorporate three distinct levels of operations (p. 89):

Casual Use – No Notice or Plan Required, Surface Disturbance of Less than 5 Acres – Notice Required, and Disturbance on More than 5 Acres Due to Mining in Special Areas – Plan of Operations Required.

- Lands affected by all operations regardless of level shall be reclaimed as required by regulations (43 CFR 3809.1-1).
- An environmental analysis (EA) is required to be completed on each plan of operation submitted. The EA will focus only on the proposed operation and the mitigation requirements necessary to prevent unnecessary or undue degradation of the area of operations. Bonding of a plan of operations is discretionary and is based on the actual cost of reclamation, on a per-acre basis.
- Salton Sea. While the area surrounding the Salton Sea has been excluded from the MUC due to the sensitive nature of the Salton Sea, which is potential habitat for some federally listed rare and endangered wildlife species, the guidelines for MUC L will apply to all mineral leasing activities (oil, gas, geothermal, sodium, and potash) on public land in and under the Salton Sea.
- Through agreement with the State Resources Agency, allow the State of California, through the counties which are the lead agencies under the State Mining and Reclamation Act of 1975 (SMRA), to jointly administer the BLM's surface-mining regulations on the public lands. The combined BLM and SMRA requirements, whichever are stricter in terms of required mitigation measures, will be the requirements that the operator will eventually have to meet. While the State of California may administer much of the permitting process, BLM recognizes its responsibility to monitor mining activities and will do so.
- All mineral-exploration and surface-mining operations that are not grandfathered under Section 603 of FLPMA are subject to the BLM's surface-mining mandate that all surface-mining and exploration operations conducted within a WSA must be conducted in such a manner as not to impair the suitability of the area of wilderness. The two main criteria involved are the reclamation potential of the disturbed area and how the disturbed site affects the WSA as a unit, not on a localized basis.
- Manage mineral resources based on MUCs:
    - MUC C: Management is based on Congressional designation.
    - MUC L, M, and I:
        - Leasable Minerals: Except as provided in BLM Categorical Exclusions, prior to approving any lease, notice, or application that was filed pursuant to 43 CFR 3045, 3100, 3200, 3500, and S.O. 3087, as amended, an EA will be prepared on the proposed action. Mitigation and reclamation measures will

be required to protect and rehabilitate sensitive scenic, ecological, wildlife, vegetative, and cultural values.

- Locatable Minerals:
  - Location of mining claims is nondiscretionary. Operations on mining claims are subject to 43 CFR 3809 regulations and applicable state and local law.
  - NEPA requirements will be met.
  - BLM will review plans of operations for potential impacts on sensitive resources identified on lands in this class. Mitigation, subject to technical and economic feasibility, will be required.
- Saleable Minerals:
  - Except as provided in BLM Categorical Exclusions, new material sales locations, including sand and gravel sites, will require an EA.
  - Continued use of existing areas of sand and gravel extractions is allowed subject to BLM permits as specified in 43 CFR 3600.

West Mojave Plan/CDCA Plan Amendment

Specific goals and objectives for this resource are not identified under the WEMO.

In summary, the management actions contained within the WEMO (BLM 2006) include:

- Federally acquired private lands and mineral resources within conservation areas are withdrawn, limiting access and availability of these resources to development.
- Existing mines in HCAs and DWMAs, where the activity is not in occupied habitat, would be allowed to continue without compensation payments because they qualify as grandfathered uses.

Northern and Eastern Mojave Desert Management Plan/CDCA Plan Amendment

There are no goals and objectives or management actions specifically identified for this resource under the NEMO.

Northern and Eastern Colorado Desert/CDCA Plan Amendment

The NECO RMP does not include goals and objectives for Mineral Resources.

The management action for mineral resources (BLM 2002b) is:

- All mining and mineral activities are subject to mitigation and compensation requirements. Whenever feasible, existing pits would be utilized for sand and gravel operations.

Imperial Sand Dunes Recreation Area Management Plan

The goals and objectives for Minerals under the ISD RAMP are described on page 2-72 of the ROD (BLM 2013a) and include:

- Provide opportunities for exploration, location, and development of mining claims and sites while preventing unnecessary or undue degradation of public lands and resources.

In summary, the management actions contained within the ISD RAMP include:

- Consolidate, through land tenure adjustments, surface and subsurface (minerals) estates under single ownerships when possible, thereby improving manageability of the federal lands involved. Consolidate split-estate pursuant to Sections 205 and 206 of FLPMA.
- Require a notice prior to conducting any exploration—defined as the search for and collection of geochemical, rock, soil, or mineral specimens using mechanized and/or motorized earth moving equipment—when removing less than 1,000 tons of presumed ore for testing, and causing surface disturbance of less than 5 acres.
- Require mining plans of operations for any explorations that would remove 1,000 tons or more of presumed ore for testing and/or result in surface disturbance greater than 5 acres, any operations that would result in greater than negligible surface disturbance, and operations that would use any mechanized or motorized earth moving equipment. A plan of operations must be approved by the authorized officer of the BLM and may be subject to stipulations to assure conformance with the land-use plan.
- Require an investigation and a report to determine the validity of the mining claim prior to approval of a mining plan of operations in withdrawn areas where the mining claim predates the withdrawal.
- Require a mining plan of operations in any special designation in accordance with existing 43 CFR 3809 regulations.
- Mining activities will be in compliance with all State of California reclamation requirements, particularly the Surface Mining and Reclamation Act.
- Congressionally designated wilderness is legislatively withdrawn from all forms of entry, appropriation, or disposal under the public land laws.
- Maintain ACEC(s) as open to mineral entry under the Mining Law, subject to Section 7 and Section 106 consultations.
- Maintain the ISD SRMA, excluding wilderness, as open to mineral entry under the Mining Law, subject to Section 7 and Section 106 consultations.

- Map 2-4 shows land available for geothermal minerals leasing within the Planning Area. For geothermal leasing, 35,115 acres are available, 139,691 acres are not available, and 14,025 acres are available, but with a no surface occupancy stipulation.
- In highly sensitive areas, where special stipulations are not sufficient to protect surface resource values, including recreation, special status species, and special designations, stipulations for no surface occupancy for leasable mineral development may be attached to the lease, in addition to no surface occupancy stipulations outlined in this plan.
- Manage consistent with the Flat-Tailed Horned Lizard Rangewide Management Strategy.
- Classify the flat-tailed horned lizard management area as available for geothermal leasing, but with a no surface occupancy stipulation.
- Classify the 1-mile-wide planning zone surrounding the SRMA (excluding the flat-tailed horned lizard management area) as available for geothermal minerals leasing.
- Exclude donated lands from geothermal minerals leasing.
- Exclude the ISD SRMA from geothermal minerals leasing.
- Prohibit surface occupancy within critical habitat, ACEC(s), other special area designations, and camping and staging areas.
- Wilderness is not available for minerals leasing.
- Issue mineral material sales or free use permits on a case-by-case basis in the approximate 1-mile-wide planning zone around the ISD SRMA consistent with applicable land use plans.
- Prohibit mineral sales or free use permits within the ISD SRMA.

II.2.2.3.7.2 Caliente Resource Management Plan

The goals and objectives for Minerals under the Caliente RMP do not include goals and objectives applicable to DRECP decisions.

In summary, the management actions contained within the Caliente RMP (BLM 1997) include the following, by management area.

South Sierra Management Decisions

Fluid Minerals

- The South Sierra Management Area contains a total of 472,000 acres of mineral estate of which approximately 128,300 acres are within Wilderness and WSAs,

which are closed to mineral leasing. Approximately 346,400 acres remain potentially available for leasing.

- Approximately 10,100 BLM acres would be closed to oil and gas leasing, and an additional 18,500 acres would be closed to geothermal development.
- Approximately 3,000 acres would be open to oil and gas leasing with a No Surface Use stipulation.
- Approximately 234,700 BLM acres would be open to oil and gas leasing under standard terms and conditions.
- Approximately 95,600 acres would be open to oil and gas leasing under a Limited Surface Use (LSU) stipulation.
- Special categories of the LSU stipulation will be applied as follows:
  - 34,400 acres are subject to the LSU-Protected Species stipulation
  - 22,300 acres are subject to the LSU-Critical Habitat stipulation
  - 27,400 acres are subject to the LSU-Sensitive Species stipulation
  - 18,500 acres are subject to the LSU-Raptor stipulation

Solid Minerals

- Existing land use allocations for Wilderness Areas have closed 109,000 acres to entry under the General Mining Act of 1872.
- Approximately 6,300 acres are proposed for withdrawal from entry under the mining law in four areas. These areas would include portions of the Blue Ridge and Case Mountain ACECs and Erskine Creek and Keyesville SMAs.
- The remaining 356,700 acres within the South Sierra Management Area would remain open to exploration and development under existing laws and regulations.
- Management objectives and guidelines would be utilized to evaluate applications for development of the solid mineral and mineral material resources.

II.2.2.3.7.3 Bishop Resource Management Plan

Bishop RMP SOPs pertaining to Minerals are described on page 14 of the ROD (BLM 1993). In summary, they address reclamation bonds; claim markers; review of Notices of Intent for undue and unnecessary degradation determination; conformance with state, county, and local requirements; and survey and management of underground mines for wildlife, particularly bats.

Area-wide decisions pertaining to minerals (p. 22) indicate specific areas and acreages closed to locatable mineral entry (none within the DRECP Area) and state:

- Provide salable minerals for community and private use.

II.2.2.3.7.4 Solar Programmatic Environmental Impact Statement

The 2012 ROD for the Solar PEIS (BLM 2012a) amended land use allocation decisions and utility-scale transmission decisions within 89 plans in 6 southwestern states, including the CDCA Plan, the Bishop RMP, and the Caliente RMP. Amendments to the CDCA specific to mineral resources include amending land use plans with programmatic design features that would be required for all utility-scale solar energy projects on BLM-administered land including (p. 67):

- Early consultation with the BLM to identify activities that could impact mineral development activities and ways to minimize potential adverse impacts.
- All qualifying solar energy development ROWs will stipulate that the BLM retains the right to issue oil and gas or geothermal leases with a stipulation of no surface occupancy within the ROW area.
- Solar energy development shall be located to minimize conflicts with valid existing mineral rights and/or ongoing mineral development.
- For the Imperial East SEZ, the management design feature include protecting the potential for geothermal leasing under solar energy facilities, such that ROW authorizations would be made subject to future geothermal leasing with no surface occupancy stipulations.

II.2.2.3.8 Recreation and Visitor Services

II.2.2.3.8.1 California Desert Conservation Area Plan, as Amended

The goals and objectives for recreation and visitor services under the CDCA Plan are described on page 69 (Recreation Element; BLM 1999) and include:

- Provide for a wide range of quality recreation opportunities and experiences emphasizing dispersed undeveloped use.
- Provide a minimum of recreation facilities. Those facilities should emphasize resource protection and visitor safety.
- Manage recreation use to minimize user conflicts, provide a safe recreation environment, and protect desert resources.
- Emphasize the use of public information and education techniques to increase public awareness, enjoyment, and sensitivity to desert resources.

- Adjust management approach to accommodate changing visitor use patterns and preferences.
- Encourage the use and enjoyment of desert recreation opportunities by special populations, and provide facilities to meet the needs of those groups.

In summary, the applicable goals and management actions contained within the CDCA Plan include:

- Designate Superior and Ivanpah Dry Lakes for nonmotorized open-space recreational activities.
- Manage public lands to meet the demand for recreation use especially any significant demand adjacent to desert communities.
- Survey and construction activities on the Pacific Crest National Scenic Trail and complete the BLM Management Plan. BLM will study National Historic Trail portions and consider Desert Trail concepts and implementation. Recreation Activity Management Plans will consider connector trails from urban centers to trail systems in the CDCA.
- Provide for scientific research and education on public lands, establish new areas for study, and incorporate education and research into the BLM's ongoing monitoring systems.
- Provide opportunities for solitude and primitive or unconfined forms of recreation in wilderness areas.
- Provide opportunities for motorized-vehicle play open areas. Make areas suitable for motorized-vehicle recreation available to the public through use of the state OHV funds.
- The BLM allows organized competitive events in MUCs M and I areas and across some MUC L areas including some specific routes established exclusively for permitted competitive recreation use.
- Ensure that access routes necessary for recreation are provided.
- To ensure visitor services are adequate, the BLM provides four basic components including Environmental Awareness Programs (interpretation and environmental education programs that provide practical and interesting information to enhance desert recreational experiences), an Outreach Program (a public affairs information office will be established in the Los Angeles area to provide information about the desert to the public), Volunteer Program (identify projects and sites which could be appropriate for volunteer efforts), and Maps and Brochures (develop maps and brochures for the desert).

- BLM rangers and other visitor services personnel will provide information, limited vehicle assistance, emergency medical assistance, search and rescue, enforcement of federal laws and regulations, and posting of signs.
- Visitor facilities such as campgrounds, trail heads, parking loops, and visitor information kiosks may be developed but such facilities will be kept to a minimum in the desert.
- Suitability of land for recreation experience is based on its MUC:
    - MUC C: This class is suitable for nonmechanical types of recreational experience which generally involve low to very low user densities. Permanent or temporary facilities for resource protection and public health may be allowed at the discretion of authorized officer or in accordance with approved Wilderness Plans.
    - MUC L: This class is suitable for recreation which generally involves low to moderate user densities. Permanent or temporary facilities for resource protection and public health may are allowed.
    - MUC M: This class is suitable for a wide range of recreational activities which may involve moderate to high user densities. Permanent or temporary facilities for resource protection and public health may are allowed.
    - MUC I: This class is suitable for recreation activities which generally involve High user densities. Permanent or temporary facilities for resource protection and public health may are allowed.

West Mojave Plan/CDCA Plan Amendment

Specific goals and objectives for Recreation and Visitor Services are not identified under the WEMO.

In summary, the management actions contained within the WEMO (BLM 2006) include:

- Exclude vehicle speed events from DWMAs and Mohave Ground Squirrel Conservation Area; and eliminate select races.
- Seasonal restrictions on dual sport in DWMAs.
- Motorized vehicle camping guidelines.
- Minimum impact recreation (e.g., hiking, equestrian use, bird watching, photography) allowed in all areas.

Northern and Eastern Mojave Desert Management Plan/CDCA Plan Amendment

Specific goals and objectives for Recreation and Visitor Services are not identified under the NEMO.

In summary, the management actions contained within the NEMO include (BLM 2002a):

- Eliminate the existing Barstow to Vegas racecourse within the NEMO planning area.
- Eliminate general design criteria contained in 1980 CDCA Plan MUC Guidelines because of the extreme difficulty in finding environmentally suitable opportunities in the planning area.

Northern and Eastern Colorado Desert/CDCA Plan Amendment

The NECO RMP does not include goals and objectives and management actions for Recreation.

Note that in the NECO, OHV management is addressed under Comprehensive Trails and Travel Management; those management actions are listed here. The management actions for recreation include (BLM 2002b):

- Use of firearms would be permitted and regulated according to state regulations and county ordinances.
- Before a competitive OHV event in Johnson Valley to Parker corridor would be authorized an event-specific EA would be completed.
- Competitive motorized-vehicle events in which speed is the primary competitive factor would be prohibited except on approved competitive recreation routes (e.g., Johnson Valley to Parker route) and within OHV Recreation Areas.

Imperial Sand Dunes Recreation Area Management Plan

The goals and objectives for Recreation and Visitor Services under the ISD RAMP are described on page 2-80 of the ROD (BLM 2013a) and include:

- This recreation and visitor services blueprint (based on the BLM National Recreation and Visitor Services program) for the future also sets three primary goals for the BLM recreation program:
  - Improve access to appropriate recreation opportunities on BLM-managed lands.
  - Ensure a quality experience and enjoyment of natural, biological, and cultural resources on BLM-managed lands.
  - Provide for and receive fair value in recreation.
- To meet the specific needs and changing demands of recreation visitors and changes in BLM recreation management, a BLM California-specific Recreation and Visitor Services Strategy was completed in 2008 (BLM 2008). The strategy outlined a framework with specific goals, objectives, and actions to be implemented. The three primary goals of the document were designed to increase public land stewardship through consistent and coordinated management of the BLM California recreation

program in order to achieve the best possible balance of recreational uses and land health standards statewide. The three primary goals are to:

  - Set a framework for achieving sustainable experiences and quality of life outcomes for individuals, communities, and the environment.
  - Sustain diversity, distinctive character, and capacity of BLM recreation settings.
  - Increase the economic stability and sustainability of the BLM California recreation program.

- The seven main objectives for BLM recreation management in California are to:
  1. Manage public lands for recreation experiences and quality of life.
  2. Encourage sustainable travel/tourism collaborations.
  3. Provide fair value and return through fees and commercial services.
  4. Establish a comprehensive approach to travel management.
  5. Ensure public health and safety and improve facility condition and accessibility.
  6. Enhance and expand visitor services.
  7. Encourage and sustain collaborative partnerships, volunteers, and public service.

In summary, the management actions contained within the ISD RAMP include:

- Develop or retrofit facilities to accommodate visitation and meet agency requirements.
- Design all new facilities to meet the social needs of the visitors and the management needs of the BLM.
- Provide a minimum number of recreational facilities. Those facilities should emphasize resource protection and visitor safety.
- Determine if existing facilities meet accessibility standards, management objectives, and desired future conditions. Existing facilities deemed critical will be maintained and/or modified to be accessible, to the extent possible, and safe for visitor use. Facilities not meeting management objectives and accessibility standards will be considered for removal.
- Collect recreation fees.
- Collect Special Recreation Permit fees for commercial and noncommercial activities under the authority of the Federal Lands Recreation Enhancement Act (Public Law 108-447, Section 804) and other applicable regulations and BLM policy.

- Conduct a visitor survey to provide public input on safety, natural, biological, and cultural resources concerns, and management of the planning area. Implement a visitor and OHV recreation survey.
- Work cooperatively with the OHV community, the environmental community, and other local, state, and federal agencies to develop and implement interpretive and public relations programs about issues and resources related to the planning area.
- Develop and maintain educational programs which may include on-the-ground improvements such as signs and interpretative kiosks, partnerships, and educational materials throughout the planning area as funding allows.
- Provide quality informational and interpretive materials and programs to enhance the visitor's knowledge of the planning area's flora, fauna, historic, recreational, and other significant resources and opportunities. Emphasize the use of public information and education techniques to increase public awareness, enjoyment, and sensitivity to desert resources REC-14 Consider utilization of concessionaire(s) to manage certain activities and uses in the planning area within the framework of the ISD RAMP.
- Develop ways of using concessions to help maintain or operate recreation areas.
- Protect at-risk cultural and historical resources from recreational damage as needed throughout the planning area. Work together with new and existing groups to foster partnerships that accomplish BLM goals and objectives.
- Prohibit collection of wood for home heating purposes.
- Prohibit burning wood with noncombustible items (pallets).
- Maintain and/or develop volunteer campground host program in appropriate areas.
- Prohibit vending in all areas closed to OHV recreation and in limited use areas.
- Create an environment to promote the health and safety of visitors, employees, and nearby residents by working with local, state, and federal agencies and interest groups.
- Manage recreational uses to minimize user conflicts, provide a safe recreation environment, and protect desert resources.
- Engage communities, including key enthusiasts, in the resolution of health and safety issues/other conflicts at BLM recreational sites or areas.
- Improve capacity to inform visitors about safety concerns (e.g., facilities, fire), environmental conditions, and emergency situations, both on site and by using web-based and other technologies.
- Work with law enforcement officers and public affairs staff when possible to publicize vandalism and convictions.

- Maintain involvement in community-based planning to address mutual needs including communities (all local governments), service-providing businesses, and the BLM.
- Engage chamber of commerce/tourism groups, outdoor businesses, heritage organizations, outfitters, other private recreation providers, and organized groups for ideas and ways to disseminate information regarding suitable visitor destinations on public lands, maps, and user ethics.
- Develop and maintain partnerships that fulfill local needs while balancing recreational demands in administering public lands.
- Continue and enhance partnerships with other federal and state agencies, such as the Department of Defense, California State Parks, and CDFW.
- Adjust management approach to accommodate changing visitor use patterns and preferences.
- Continue working with the business community, organized recreation groups, outfitters, communities, and interested individuals to instill a sense of pride and caring for public lands.
- Expand visitor education regarding a "pack it in, pack it out" policy. Continue to educate the public regarding "Leave No Trace or Tread Lightly!" ethics.
- Use alternative funding sources (such as Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users) to partner with local groups to further transportation planning.
- Allow camping and OHV recreation within the Dunebuggy Flats Campground.
- Allow camping and OHV recreation within some of the microphyll woodlands south of State Route 78 and north of Interstate 8.
- Prohibit camping within the microphyll woodlands south of Wash 33 and north of Wash 70. OHV recreation will continue to be allowed in this area.

II.2.2.3.8.2 Caliente Resource Management Plan

The goals and objectives for Recreation and Visitor Services under the Caliente RMP are described on page 15 of the RMP (BLM 1997) and include:

- In the South Sierra Management Area, assist in the maintenance of rural lifestyles and economies of local communities by providing for livestock grazing, community infrastructure needs, and a range of dispersed recreational opportunities.

In summary, the management actions contained within the Caliente RMP include the following, by management area.

Plan-Wide Land Decisions

- Camping up to 14 days per person within any 30-day period and up to 28 days in a 1-year period is allowed in any location not specifically closed to camping. Dispersed camping is not permitted within 100 feet of any freshwater source.
- Personal property left unattended on public land for more than 72 hours would be treated as abandoned.
- Shooting is not allowed within 0.25 mile of developed recreational sites, visitor facilities, livestock water improvements, guzzlers, the Poso Creek area (E½NE¼, Sec. 32, T. 27 S., R. 27 E., MDB&M), the area around Soda Lake, the vicinity of Painted Rock (closed to both shooting and hunting), and all authorized facilities belonging to lessees or permittees of the federal government, as well as buildings and residences on adjacent private lands. These areas, except Painted Rock, are still available for the lawful taking of game. The restrictions do not apply to federal, state, and local law enforcement officers who are engaged in their official duties.
- The speed limit on unpaved roads not maintained by the county shall be a maximum of 25 mph [miles per hour] (unless otherwise posted).
- Collection of wood, plant material, or minerals specimens, other than casual collection, requires a permit.

II.2.2.3.8.3 Bishop Resource Management Plan

Bishop RMP SOPs for Recreation and Visitor Services (BLM 1993, p. 14) include those pertaining to Travel Management and described in Section II.2.2.3.2.3; and another expressing the commitment to make suitability determinations for waterways under the Wild and Scenic River review process.

The following area-wide decisions address recreation and visitor services within the DRECP Area (p. 17):

- Manage the resource area to provide for a variety of dispersed recreation opportunities. Emphasize primitive, semi-primitive motorized, semi-primitive nonmotorized and roaded natural experiences. Maintain and enhance semi-primitive and other physical settings by providing compatible recreation opportunities within those settings. Manage visitor use to conform with semi-primitive and other physical settings. Recreation management may include developing trails for hiking, mountain biking, and horseback riding; providing OHV

use opportunities; designating scenic byways; interpreting natural and cultural resources; and establishing an environmental education program. The Bodie Bowl and the Alabama Hills will remain designated as SRMAs.

- Manage the Alabama Hills SRMA to protect unique geologic features and scenic values and to provide compatible recreational opportunities.
- Provide campgrounds at Tuttle Creek and Goodale Creek (Owens Valley Management Area).

The following Bishop RMP decisions by management area also address recreation and visitor services within the DRECP Area:

Owens Valley Management Area

- Manage the Alabama Hills SRMA to enhance semi-primitive nonmotorized and roaded natural opportunities such as photography, mountain biking, hiking, four-wheel-drive touring, and horseback riding.
  - Allow camping in designated areas only.
  - Yearlong Protection of the Alabama Hills. Target resources are scenic values, geologic features, and riparian habitats.
  - Acquire up to 634 acres of private land to protect recreational and scenic values.
- Manage the remainder of the area for semi-primitive nonmotorized and motorized recreation opportunities.
- Designate Scenic Byways along Manzanar Road, Movie Flat Road and State Highway 168.

South Inyo Management Area

Manage for primitive recreation opportunities in the proposed Southern Inyo Wilderness Area.

Provide for semi-primitive motorized and semi-primitive nonmotorized recreation opportunities in the remainder of the area.

- Manage the suitable portion of the Southern Inyo WSA as wilderness.
- Acquire easements for hiking access to the Long John Canyon, Pat Keyes, Union Wash, and Forgotten Pass trails.
- Yearlong Protection of the proposed wilderness. Target resources include all wilderness values.

Owens Lake Management Area

- Provide direction and financial support to the Interagency Visitor Center.

II.2.2.3.8.4 Solar Programmatic Environmental Impact Statement

The 2012 ROD for the Solar PEIS (BLM 2012a) amended land use allocation decisions and utility-scale transmission decisions within 89 plans in 6 southwestern states, including the CDCA Plan, the Bishop RMP, and the Caliente RMP. Amendments to the CDCA specific to recreation include amending land use plans with programmatic design features that would be required for all utility-scale solar energy projects on BLM-administered land including:

- Exclusions under the BLM's Solar Energy Program include developed recreational facilities, special-use permit recreation sites, and all SRMAs identified in applicable land use plans (p. 38).
- Exclusions under the BLM's Solar Energy Program include Secretarially designated National Recreation, Water, or Side and Connecting Trails and National Back Country Byways (BLM State Director-approved) identified in applicable BLM and local land use plans (available at http://www.americantrails.org/NRTDatabase), including any associated corridor or lands identified for protection through an applicable land use plan (p. 39).
- Exclusions under the BLM's Solar Energy Program include Wild, Scenic, and Recreational Rivers designated by Congress, including any associated corridor or lands identified for protection through an applicable river corridor plan (p. 39).
- Project developers shall consult with the BLM early in the project planning to identify public access and recreation use areas in and adjacent to the project site and identify methods to minimize conflicts (p. 60).
- Solar facilities shall not be sited in areas designated as unique or important recreation resources (such as SRMAs), where it has been determined that a solar facility or other such development of the land would be in direct conflict with the objectives of the relevant management plan (p. 61).
- Exclusions under the BLM's Solar Energy Program include all units of the BLM NLCS, congressionally designated National Scenic and Historic Trails (National Trails System Act, Public Law 90-543, as amended), and National Trails System Act trails recommended as suitable for designation (p. 39).

- Project developers shall consult with the BLM and the trail administering agency early in the project planning to help determine the proposed project's conformance with trail management prescriptions and other potential trail-related constraints (p. 127).
- Potential replacement of acreages lost for OHV use (p. 60).

II.2.2.3.9 Soil, Water, and Water-Dependent Resources

II.2.2.3.9.1 California Desert Conservation Area Plan, as Amended

The CDCA Plan does not establish goals specifically for soil resources. The goals, objectives, and authorities for water resources under the CDCA Plan are described on page 117 (CDCA Water-Resources Program; BLM 1999) and include:

- Clean Water Act—The purpose of BLM implementation of this act is to prevent water-quality deterioration and to improve water quality where it has already been degraded. In addition to the act itself, further direction is given by Executive Order 12088, which instructs the federal government to comply with water-pollution control regulations, and by the 208 Water-Quality Management Report (BLM 1979).
- Safe Drinking Water Act—The purpose of complying with this act is to insure safe drinking water in accordance with applicable drinking-water standards. Executive Order 12088 instructs Federal agencies to implement the act.
- Floodplain Management—The purpose of floodplain management is the avoidance of adverse impacts resulting from the occupancy and modification of floodplains.
- Water Rights—Presidential messages of June 6 and July 12, 1978, provided the initiative for establishing certainty in regard to federal and state relations in water rights. The Department of the Interior Solicitor's Opinion No. M-36914 of June 25, 1979, was an initial step in clarifying federal and state roles. Ultimately, however, federal water rights must be identified and quantified. This will be accomplished through an inventory of existing BLM water uses and needs, in relation to existing or needed water rights. Procedures for BLM compliance with state water-right laws will be identified in BLM Manual 7154, "Water Rights," (reserved). This manual will be used in complying with acceptable State procedures to obtain water rights for Bureau management programs, wherever possible. This effort will be undertaken in close coordination with the State of California.
- Water Development—Several Bureau management programs specified in the FLPMA require the use of developed water supplies to insure the availability of water. In addition to obtaining and protecting water rights, adequate data concerning the occurrence of surface and ground water must be available to facilitate the location of developments.

- Water Storage Project—A number of water conservation projects are being investigated by the Metropolitan Water District of Southern California (MWD) with encouragement and support from the U.S. Water and Power Resources Service, State Resources Agency, and CSLC. These projects may include spreading facilities near the Colorado River Aqueduct and retrieval and pump-back facilities within storage basin areas. The MWD is presently investigating two such basins for underground storage—Shavers and Hayfield. The BLM recognizes the importance of these future projects and the present uncertainty associated with the location of facilities. These facilities may be allowed on public land but will be considered on a case-by-case basis in MUCs L, M, and I with appropriate environmental assessment (i.e., EA or EIS).

In summary, the management actions contained within the CDCA Plan include:

Soil

- Potential reclamation of motorized vehicle-use open areas such that they could be continuously used in the future and avoid spreading to new areas.
- Implement soil studies to investigate the impacts to soils from different management actions such as cattle grazing, off-road vehicles, and utility corridors. Conduct soil inventories with different levels of detail throughout the CDCA where appropriate.
- Monitor soil impacts.

Water and Water-Dependent Resources

- Implement the CDCA Water Resources Program including tasks such as acquisition and protection of water rights, performing a water use and needs inventory, regional and site specific investigation of water quantity and quality, monitoring baseline water quality and impacts of activities, monitoring public drinking water, conducting floodplain delineations, impact analysis, and special studies; and non-BLM initiated projects (p. 117).
- Manage wetlands and riparian areas to avoid long-term and short-term impacts associated with destruction, loss, or degradation; preserve and enhance natural and beneficial values, and include practical measures to minimize harm in all actions.
- Manage water resources based on the MUC:
    - MUC C: These areas will be managed to maintain and enhance both surface and groundwater resources
    - MUC L: Areas designated in this class will be managed to provide for the protection and enhancement of surface and groundwater resources, except for instances of short-term degradation caused by water development projects. Best

management practices, developed by the BLM during the planning process outlined in the Clean Water Act Section 208, will be used to avoid degradation and to comply with Executive Order 12088.

- MUCs M and I: Areas designated in this class will be managed to minimize degradation of water resources. Best management practices, developed by the BLM during the planning process outlined in the Clean Water Act, Section 208, will be used to keep impacts on water quality minimal and to comply with Executive Order 12088.

West Mojave Plan/CDCA Plan Amendment

The WEMO recommends the establishment of Regional Standards for Public Land Health and set forth standards to meet or exceed national policy for watersheds, ecological processes, water quality, and habitats, as well as guidelines to meet those standards (BLM 2006). These are detailed on pages 2-120 to 2-122. Until these standards and guidelines are approved by the Secretary of the Interior, these lands continue to be managed under the fallback standards specified at 43 CFR Part 4100.

Northern and Eastern Mojave Desert Management Plan/CDCA Plan Amendment

There are no goals and objectives or management actions specifically identified for Soil, Water, and Water-Dependent Resources under the NEMO.

Northern and Eastern Colorado Desert/CDCA Plan Amendment

The NECO recommends the establishment Regional Standards for Public Land Health and set forth Standards to meet or exceed National Policy for watersheds, ecological processes, water quality, and habitats, as well as guidelines to meet those standards (BLM 2002b). These are detailed on pages 2-11 through 2-13 of the Plan. Until these standards and guidelines are approved by the Secretary of the Interior, these lands continue to be managed under the fallback standards specified at 43 CFR Part 4100.

Imperial Sand Dunes Recreation Area Management Plan

The goals and objectives for Soil Resources under the ISD RAMP are described on page 2-25 and for Water Resources on page 2-26 (BLM 2013a). These goals and objectives include:

Soil

- Manage soils to maintain productivity and to minimize erosion.
- Preserve the natural process of dune movement and formation.
- Meet Land Health Standard No. 1, as related to soils and as described in Section 2.8.

Water

- General
  - Promote BLM activities or authorized activities that do not degrade surface or groundwater in the planning area.
  - Promote water quality to achieve or make significant progress toward achieving established BLM management objectives such as meeting wildlife needs.
  - Meet proposed Land Health Standard No. 4, as related to water quality (see Section 2.8.2).
- Surface Water
  - Identify and protect surface waters where possible.
  - Preserve and enhance the natural condition and hydrology of washes.
  - Identify area-wide use restrictions or other protective measures to meet federal, state, and local water quality requirements.
- Groundwater
  - Make groundwater, where present, available for beneficial use on public lands in coordination with the State of California and Imperial County.

The following are the management actions for Soil and Water resources:

- Minimize surface disturbance from authorized activities. Post-activity disturbed surfaces will be restored to pre-disturbance or natural conditions as applicable.
- Incorporate erosion control measures into project on a case-by-case basis.
- Prevent or reduce water quality degradation through implementation of applicable best management practices or other specific mitigation measures, when applicable.
- Continue to maintain or improve water quality in accordance with state and federal standards. Consult with the appropriate state agencies on proposed projects that may significantly affect water quality.
- Maintain authorized vehicle routes in a manner that will promote natural hydrology and protect water quality through application of best management practices.

The ISD RAMP recommends the establishment Regional Standards for Public Land Health and sets forth standards to meet or exceed National Policy for watersheds, ecological processes, water quality, and habitats, as well as guidelines to meet those standards. These are detailed on pages 2-21 to 2-23. Until these standards and guidelines are approved by

the Secretary of the Interior, these lands continue to be managed under the fallback standards specified at 43 CFR Part 4100.

II.2.2.3.9.2 Caliente Resource Management Plan

Caliente RMP area-wide management objectives for soils, water, or water-dependent resources are described on pages 3 and 49–52 (BLM 1997) and are incorporated by reference.

In summary, the management actions contained within the Caliente RMP include:

- Naturally occurring waters on public lands, including public water reserves, would be managed to maintain, improve, or benefit in-stream flow requirements needed for riparian systems. Applications for water developments or diversions on public lands would be approved only if the above needs have been met (p. 20).

II.2.2.3.9.3 Bishop Resource Management Plan

Bishop RMP SOPs for Soil, Water, and Air are described on page 13 of the ROD (BLM 1993):

In summary, the plan-wide management actions contained within the Bishop RMP include:

- Prohibit groundwater pumping where it would interfere with valid existing water uses, desired plant community goals, or other resource condition objectives.

II.2.2.3.9.4 Solar Programmatic Environmental Impact Statement

The 2012 ROD for the Solar PEIS (BLM 2012a) amended land use allocation decisions and utility-scale transmission decisions within 89 plans in 6 southwestern states, including the CDCA Plan, the Bishop RMP, and the Caliente RMP. Amendments to the CDCA specific to soil and water resources include amending land use plans with programmatic design features that would be required for all utility-scale solar energy projects on BLM-administered land including (p. 62 and p. 67):

- Coordinate with BLM and other federal, state, and local agencies to assess soil erosion and minimize potential impacts.
- Solar energy development shall be sited, designed, and constructed to minimize soil erosion and geologic hazard concerns.
- Developers shall monitor compliance with conditions for soil resources and geologic hazards.
- Permanent stabilization of disturbed areas during final grading and landscaping of site and maintenance through life of facility.

- Soil erosion features for reclamation and decommissioning.
- Control project site drainage, erosion, and sedimentation related to stormwater runoff, and develop measures to prevent adverse impacts associated with soil deposition and erosion throughout and downslope of the project site. Implement a Stormwater Pollution Prevention Plan.
- Project developers shall conduct a hydrologic study (or studies) that demonstrate a clear understanding of the local surface water and groundwater hydrology. Developers shall coordinate with BLM and other federal, state, and local agencies to identify water use for solar energy project and secure a reliable and legally available water source.
- Project developers shall avoid and/or minimize impacts on existing surface water features, including streams, lakes, wetlands, floodplains, intermittent/ephemeral streams, and playas (any unavoidable impacts would be minimized or mitigated) and in nearby regions resulting from the development in accordance to applicable laws and regulations. Project developers shall avoid, minimize, and mitigate impacts on groundwater and surface water resources in accordance with laws and policies.
- Developer will monitor compliance with terms and conditions regarding water resources and consult with the BLM through operations and maintenance and decommissioning of the project.
- Maintain aquatic, riparian, and other water-dependent resources.

II.2.2.3.10 Visual Resources Management

II.2.2.3.10.1 California Desert Conservation Area Plan, as Amended

The CDCA Plan incorporates VRM goals based on the MUC Guidelines (BLM 1999).

In summary, the management actions contained within the CDCA Plan include:

- Appropriate levels of management, protection, and rehabilitation on all public lands in the CDCA commensurate with visual resource management objectives in the MUC guidelines.
- Evaluate the extent of change created in a given landscape and specify appropriate design or mitigation measures using BLM's contract rating process.

West Mojave Plan/CDCA Plan Amendment

There are no goals and objectives or management actions specifically identified for VRM under the WEMO.

Northern and Eastern Mojave Desert Management Plan/CDCA Plan Amendment

There are no goals and objectives or management actions specifically identified for VRM under the NEMO.

Northern and Eastern Colorado Desert/CDCA Plan Amendment

The NECO RMP does not include goals and objectives and management actions for visual resources.

Imperial Sand Dunes Recreation Area Management Plan

The goals and objectives for VRM under the ISD RAMP are described on page 2-60 of the ROD (BLM 2013a) and are incorporated by reference. The ISD RAMP set VRM classes ranging from Class I to IV, and all future projects and actions must adhere to the VRM class objectives. These classes are described in detail on page 2-60 of the ROD. See also Map 2-2 of the ROD.

Table II.2-13
Visual Resource Management Classes within Imperial Sand Dunes Planning Area

VRM Class	Acres
Class I	26,000
Class II	105,000
Class III	69,000
Class IV	15,000
Total	**215,000**

The management actions contained within the ISD RAMP includes:

- Incorporate design considerations to minimize potential impacts to public lands' visual values into all surface-disturbing activities, regardless of size. Proponents will be encouraged to meet with BLM personnel to discuss and provide input during the initial planning and design phase to minimize costly redesign and mitigation at a later time.
- Evaluate proposed surface-disturbing activities in accordance with BLM VRM Handbook H-8431-1 Visual Resource Contrast Rating. Conduct a visual contrast analysis to ensure that projects meet the VRM class requirements for that area. This visual contrast analysis from Key Observation Points will consider the following factors: distance (between project and Key Observation Points), angle of observation, length of

time the proposed project would be in view, relative size or scale, season of use, light conditions, recovery time, spatial relationships, atmospheric conditions, and motion.

- Use visual resource design techniques and best management practices to mitigate the potential for short- and long-term visual impacts from other uses and activities until demonstrated to meet the VRM class objectives.
- Designate wilderness as Class I, in accordance with BLM's national policies.
- Encourage retrofitting of existing facilities to comply with the VRM Class objectives for that area by working in partnership with existing ROW holders (such as communication sites). Incorporate mitigation measures, such as repainting existing facilities, and carefully locating and designing new facilities (such as by using topographic screening) to minimize their contrast with the characteristic landscape.
- Designate ACECs as Class II or in some cases as Class III. Designate Class III and IV to areas with high potential for renewable resource uses, areas that are managed for high recreational value, and other areas which continue to be managed primarily for habitat values, regardless of scenic quality.

II.2.2.3.10.2 Caliente Resource Management Plan

There are no goals and objectives or management actions specifically identified for VRM under the Caliente RMP.

II.2.2.3.10.3 Bishop Resource Management Plan

The Bishop RMP assigned VRM classes and corresponding VRM standards to all lands in the Field Office area, and states as an area-wide decision, "Manage all activities to conform with VRM standards. VRM standards will be applied according to Visual SOPs" (p. 17). VRM Class Objective Descriptions are provided in the RMP Appendix 3 (p. A3-1) and are incorporated by reference (BLM 1993).

The following Bishop RMP SOPs (pp. 14–15) pertain to visual resources within the DRECP Area:

- Enforcement emphasis for VRM classes 2–4 will be along key observation points. Outside key observation points, the BLM will apply designated VRM class prescriptions but the Area Manager may allow development to exceed the VRM class for reasons such as technological infeasibility or low visitor use.
- The Area Manager may allow temporary projects to exceed VRM standards in class 2–4 areas, if the project will terminate within 2 years of initiation. Rehabilitation will begin at the end of the 2-year period. During the temporary

project, the Area Manager may require phased mitigation to better conform with prescribed VRM standards.

- VRM classes acknowledge existing visual contrasts. Existing facilities or visual contrasts will be brought into VRM class conformance to the extent practicable when the need or opportunity arises (i.e., ROW renewals, mineral material site closures, or route designation activity plans).
- All power lines will be constructed using non specular wire. Steel towers will be constructed of corten steel.

Area-wide decisions include utility corridor designations and state,

- Future facilities in these corridors may be allowed to exceed VRM and Yearlong Protection standards. Extensive mitigation will be required and may include, but is not limited to:
  - Painting and use of nonspecular steel materials to reduce visibility; and
  - Requiring the use of shared facilities.

Bishop RMP decisions by management area specify the locations to be managed according to the following VRM standards (for locations within the DRECP area):

Owens Valley Management Area

- VRM II — Alabama Hills SRMA, Red Mountain, and Crater Mountain
- VRM IV — Poleta Canyon and Fish Springs Hill
- VRM III — Remainder of the area

South Inyo Management Area

- VRM I — Proposed wilderness area
- VRM II — The foothills of the Inyo Mountains and that portion of the Inyo Range south of Swansea
- VRM III — Remainder of the area

Owens Lake Management Area

- VRM III — East of Owens Lake
- VRM IV — West of Owens Lake

II.2.2.3.10.4 Solar Programmatic Environmental Impact Statement

The 2012 ROD for the Solar PEIS (BLM 2012a) amended land use allocation decisions and utility-scale transmission decisions within 89 plans in 6 southwestern states, including the CDCA Plan, the Bishop RMP, and the Caliente RMP. Amendments to the CDCA Plan specific to visual resources include amending land use plans with programmatic design features that would be required for all utility-scale solar energy projects on BLM-administered land including (p. 94):

- Early consultation with BLM to help determine a proposed project's potential conformance to VRM class designations and potential constraints to avoid costly unforeseen planning implications and redesign.
- Site solar facilities to minimize glint and glare and night-sky effects.
- The siting and design of solar facilities, structures, roads, and other project elements shall explore and document design considerations for reducing visual dominance in the viewshed and shall comply with the VRM class objectives.
- Project developer shall perform a preconstruction meeting with BLM to coordinate the project construction VRM mitigation strategy. Final design and construction documents will be reviewed with regard to the visual mitigation elements. The review of construction documents will include, but not be limited to, grading, drainage, revegetation, vegetation clearing, and feathering.
- Compliance for visual mitigation will be monitored by the project developer.
- Reclamation will begin immediately after construction to reduce visual impacts, in coordination with the BLM.

II.2.2.3.11 Wild Horses and Burros

II.2.2.3.11.1 California Desert Conservation Area Plan, as Amended

The goals and objectives for wild horses and burros under the CDCA Plan are described on page 51 (Wild Horse and Burro Element; BLM 1999) and include:

- Provide year-long feed, cover, and water requirements for wild horses and burros within specified areas. Feed and water requirements will be satisfied by reserving and developing sufficient forage and water to maintain biological demands for a specific number of animals. Cover or living area will be provided and preserved through Herd Management Area Plans
- Protect wild horses and burros on public lands by conducting surveillance to prevent unauthorized removal or undue harassment of animals.

- Remove all wild horses and burros from areas not designated for retention. Remove excess wild horses and burros from designated retention areas.

In summary, the management actions contained within the CDCA Plan include:

- Protect and Manage 17 Herd Management Areas. Eliminate herds from five horse and burro areas. Prepares Herd Management Area Plans (HMAPs) for the 17 areas, grouping the areas as appropriate. HMAPs will identify objectives for the horses and burros management techniques to improve the conditions of the animals and improve the habitat requirements of food, cover, water, and living space. Preparation of the HMAPs is prioritized based on the level of resource conflicts found within the HMAPs.
- No Herd Management Areas will be established on military land. The Yuma, Arizona BLM District has the lead for implementing the Colorado River HMAP which contains the Dead Mountain, Chemehuevi, Chocolate/Mules, and Picachos Herd Management Area.
- A capture plan will be prepared whenever horses and burros are removed. If it is not possible to capture horses and burros, burros may be euthanized.
- Protection of wild horses and burros on public lands will be provided through vehicular patrols of the Desert by Desert Rangers and other BLM employees.
- A monitoring system will be designed to evaluate the effectiveness of HMAP management techniques in meeting objectives of the HMAP including estimates of population numbers, monitoring distribution and movement patterns, monitoring population dynamics, determination of seasonal diets, and monitoring vegetation. HMAP population levels may be adjusted based on monitoring.

West Mojave Plan/CDCA Plan Amendment

There are no goals and objectives or management actions specifically identified for Wild Horses and Burros under the WEMO.

Northern and Eastern Mojave Desert Management Plan/CDCA Plan Amendment

There are no goals and objectives specifically identified for Wild Horses and Burros under the NEMO.

In summary, the management actions contained within the NEMO include (BLM 2002a):

- Eliminate the Clark Mountain Herd Management Area for wild horses and burros in the Ivanpah DWMA and adjust the Appropriate Management Level (AML) from 44 to 0 throughout the herd area to provide for recovery of the desert tortoise.

- In the Chicago Valley Herd Management Area, adjust the AML for wild horses and burros in the Amargosa watershed to reflect the current situation and prevent future impacts from the growth of herds on listed plants. AML for wild horses would be adjusted from 28 to 12 to maintain the current herd of animals, and AML for burros would be adjusted from 28 to 0.

Northern and Eastern Colorado Desert/CDCA Plan Amendment

There are no goals and objectives specifically identified for Wild Horses and Burros under the NEMO. The management actions for wild horses and burros include (BLM 2002b):

- Retaining and combining common herds and management units that are common to California and Arizona administrations, adjusting the boundaries and AMLs and designating a single BLM field office to manage the units, resolve management issues, and improve program administration.
- BLM would add historic burro range in the Chocolate Mountains-Cargo Muchacho Mountains.
- BLM would combine Chemehuevi and Havasu Herd Management Areas into a single burro herd management area and modify boundaries to reduce conflicts.
- Eliminate the Picacho Herd Management Area for horses.
- Combine historical burro range and Chocolate/Mule Mountains and Cibola-Trigo Herd Management Area and modify boundary to reduce conflicts with Picacho State Recreation Area.

Imperial Sand Dunes Recreation Area Management Plan

There are no goals and objectives or management actions specifically identified for Wild Horse and Burro Management under the ISD RAMP. There are no designated herd management areas or populations of wild horses and burros within the ISD RAMP area.

II.2.2.3.11.2 Caliente Resource Management Plan

There are no goals and objectives or management actions specifically identified for Wild Horse and Burro Management under the Caliente RMP. There are no designated herd management areas or populations of wild horses and burros within the Caliente RMP area.

II.2.2.3.11.3 Bishop Resource Management Plan

There are no goals and objectives or management actions specifically identified for Wild Horse and Burro Management under the Bishop RMP. There are no designated herd

management areas or populations of wild horses and burros within the DRECP Area in the Bishop Field Office area.

II.2.2.3.11.4 Solar Programmatic Environmental Impact Statement

The 2012 ROD for the Solar PEIS amended land use allocation decisions and utility-scale transmission decisions within 89 plans in 6 southwestern states, including the CDCA Plan, the Bishop RMP, and the Caliente RMP (BLM 2012a). Amendments to the CDCA specific to wild horses and burros include amending land use plans with programmatic design features that would be required for all utility-scale solar energy projects on BLM-administered land including (p. 57):

- Early consultation with the BLM to assess and consider options to avoid, minimize, and/or mitigate impacts on wild horses and burros and their management areas.
- Project access roads shall be sited, designed, constructed, fenced, and/or improved to minimize potential wild horse and burro collisions. Fences, or other appropriate structures, should be constructed to exclude wild horses and burros from solar energy project site facilities. Either water sources or access routes to water sources for horses and burros should be excluded from the solar energy development area, or alternate water sources or routes should be provided

II.2.2.3.12 Lands With Wilderness Characteristics

Where a given land use plan does not address Lands With Wilderness Characteristics, an inventory will be completed on a case-by-case basis and incorporated into the project-level NEPA document.

II.2.2.3.12.1 California Desert Conservation Area Plan, as Amended

The CDCA Plan does not address Lands with Wilderness Characteristics outside of Wilderness Areas and WSAs.

Imperial Sand Dunes Recreation Area Management Plan

The ISD RAMP ROD identified 42,083 acres as possessing wilderness characteristics (Wilderness Characteristic Unit [WCU] 1). The goals and objectives for Lands with wilderness characteristics under the ISD RAMP are described on page 2-69 of the ROD (BLM 2013a), and are incorporated by reference.

The management actions contained within the ISD RAMP include:

- Allow motorized recreation per OHV use allocations.

- Protect resource values that are present on the lands through prescriptions of the recreation management zones for that area.
- WCU 1 will be managed under Open, Open/No Camping, and Resource Protection Recreation Management Zones.
- WCU 1 is unavailable for solar and wind energy development.
- WCU 1 is not available for mineral leasing, mineral material sales, or free use permits.
- Lands within WCU 1 are to be retained and are not available for disposal (sale or exchange).

II.2.2.3.12.2 Caliente Resource Management Plan

There are no goals and objectives or management actions specifically identified for Lands with Wilderness Characteristics under the Caliente RMP.

II.2.2.3.12.3 Bishop Resource Management Plan

There are no goals and objectives or management actions specifically identified for Lands with Wilderness Characteristics under the Bishop RMP.

II.2.2.3.12.4 Solar Programmatic Environmental Impact Statement

The 2012 ROD for the Solar PEIS amended land use allocation decisions and utility-scale transmission decisions within 89 plans in 6 southwestern states, including the CDCA Plan, the Bishop RMP, and the Caliente RMP (BLM 2012a).

The following design features are identified in the Solar PEIS ROD to avoid, minimize, and/or mitigate potential impacts on specially designated areas and lands with wilderness characteristics from solar energy development:

- Protection of existing values of specially designated areas and lands with wilderness characteristics shall be evaluated during the environmental analysis for solar energy projects, and the results shall be incorporated into the project planning and design.
    - Assessing potential impacts on specially designated areas and lands with wilderness characteristics shall include, but is not limited to, the following:
        - Identifying specially designated areas and lands with wilderness characteristics in proximity to the proposed projects. In coordination with the BLM, developers shall consult existing land use plans and updated inventories.
        - Identifying lands that are within the geographic scope of a proposed solar energy project that have not been recently inventoried for

wilderness characteristics or any lands that have been identified in a citizen's wilderness proposal in order to determine whether they possess wilderness characteristics. Developers shall consider including the wilderness characteristics evaluation as part of the processing of a solar energy ROW application for those lands without a recent wilderness characteristics inventory. All work must be completed in accordance with current BLM policies and procedures.

- Evaluating impacts on specially designated areas and lands with wilderness characteristics as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.

- Methods to mitigate unavoidable impacts on specially designated areas and lands with wilderness characteristics may include, but are not limited to, the following:
  - Acquiring wilderness inholdings from willing sellers.
  - Acquiring private lands from willing sellers adjacent to designated wilderness.
  - Acquiring private lands from willing sellers within proposed wilderness or WSAs.
  - Acquiring other lands containing important wilderness or related values, such as opportunities for solitude or a primitive, unconfined (type of) recreation.
  - Restoring wilderness, for example, modifying routes or other structures that detract from wilderness character.
  - Contributing mitigation monies to a "wilderness mitigation bank," if one exists, to fund activities such as the ones described above.
  - Enacting management to protect lands with wilderness characteristics in the same field office or region that are not currently being managed to protect wilderness character. Areas that are to be managed to protect wilderness characteristics under this approach must be of sufficient size to be manageable, which could also include areas adjacent to current WSAs or adjacent to areas currently being managed to protect wilderness characteristics.

- Solar facilities shall be sited, designed, and constructed to avoid, minimize, and/or mitigate impacts on the values of specially designated areas and lands with wilderness characteristics.

II.2.3 Natural Community Conservation Plan Elements of the No Action Alternative

Under the No Action Alternative, the CDFW would not propose to develop an NCCP to streamline future permitting of incidental take of CESA-listed species resulting from renewable energy projects and associated transmission in the California deserts. CESA permitting would occur on a project-by-project basis, and any mitigation required to offset the effects on state-listed species would not be based on a comprehensive, desert-wide conservation strategy, as proposed under the DRECP. The existing and proposed conservation and existing and proposed renewable energy development described under the Plan-wide No Action Alternative (Section II.2.1) serves as the description of the No Action Alternative for the NCCP.

II.2.4 General Conservation Plan Elements of the No Action Alternative

The USFWS proposed action is a component of the interagency DRECP Preferred Alternative. USFWS proposes to issue incidental take permits under the programmatic GCP, and to approve the GCP through the signing of a ROD for the USFWS NEPA portion of the DRECP Draft EIR/EIS and other internal USFWS analyses. Under the DRECP No Action Alternative, the USFWS would not approve the GCP or issue permits under the GCP.

Under the No Action Alternative, the two currently existing options for nonfederal proponents of renewable energy projects (individual developers, local jurisdictions, state agencies) would be available: (1) Projects that would not affect ESA-listed species could go forward, assuming other federal, state, and local laws would be met, as no USFWS incidental take permit would be needed. (2) Proponents of projects that would result in incidental take of ESA-listed species would have to apply to USFWS individually, project by project, for an incidental take permit, in order to comply with the ESA. Each applicant would have to develop an HCP; the streamlining benefits of the DRECP GCP would not be available. The USFWS has not received inquiries from any renewable energy proponents regarding incidental take permitting on nonfederal lands within the California deserts.

Under the No Action Alternative there would be no comprehensive conservation strategy implemented to include mitigation for renewable energy development on nonfederal lands. Any mitigation required by individual project HCPs likely would be piecemeal; however, the USFWS's permit decisions and determinations regarding HCPs would be informed by information and analysis developed during the DRECP planning process. Under the No Action Alternative, applicants would have to acquire mitigation lands only on appropriate nonfederal lands, as approved by USFWS.

II.3 PREFERRED ALTERNATIVE

The Preferred Alternative is one of five action alternatives considered and analyzed in the Desert Renewable Energy Conservation Plan (DRECP or Plan) and Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The description of the Preferred Alternative is first provided at an interagency level (Section II.3.1), which describes all plan elements of the alternative. After the interagency description, the individual elements of the alternative are described, including the Bureau of Land Management (BLM) Land Use Plan Amendment (LUPA) elements of the DRECP (Section II.3.2), the Natural Community Conservation Plan (NCCP) elements of the DRECP (Section II.3.3), and the General Conservation Plan (GCP) elements of the DRECP (Section II.3.4).

II.3.1 Interagency Description of the Preferred Alternative

The interagency description of the Preferred Alternative includes the following main sections: Overview of the Preferred Alternative, Conservation Strategy, Monitoring and Adaptive Management Program (MAMP), Description of the Covered Activities, and Plan Implementation. The description of the Preferred Alternative for the DRECP and EIR/EIS encompasses the overall conservation strategy and description of Covered Activities on federal and nonfederal (i.e., state, county, city, and privately owned lands) within the Plan Area.

II.3.1.1 Overview of the Preferred Alternative

The following provides a Plan-wide overview of the Preferred Alternative. The Preferred Alternative integrates renewable energy and resource conservation with other existing uses in the Plan Area and includes BLM LUPA elements, NCCP elements, and GCP elements.

Under the Preferred Alternative for the DRECP and EIR/EIS, a conservation strategy for the Plan Area would be established that includes a streamlined process for the permitting of renewable energy and transmission development on both federal and nonfederal lands and a BLM LUPA providing Conservation and Management Actions (CMAs) for resources throughout the Plan Area on BLM-administered lands. At the broadest Plan-wide level, the Preferred Alternative includes the following components defined below: Development Focus Areas (DFAs), Study Area Lands, and the DRECP Plan-Wide Reserve Design Envelope.

Development Focus Areas (DFAs) represent the areas within which the activities associated with solar, wind, and geothermal development, operation, and decommissioning would be covered under this alternative. Transmission development and operation would occur in previously designated corridors and other identified areas, both inside and outside

the DFAs. Detailed descriptions of Covered Activities for the Preferred Alternative are presented in Section II.3.1.4.

Study Area Lands collectively refer to three mapping categories:

- Future Assessment Areas (FAAs): These represent areas that are subject to future assessment for suitability for renewable energy development or ecological conservation. The knowledge about the value of these areas for renewable energy development is ambiguous. The current known value of these areas for ecological conservation is moderate to low; therefore the areas are not allocated to either development or conservation and are assigned to future assessment and decisions. The DRECP does not cover renewable energy development in FAAs, nor are the FAAs part of specific reserve envelopes within alternatives or ecological conservation designation. FAAs represent areas where solar, wind, and geothermal energy development, operation, and decommissioning, or inclusion in the reserve/ecological conservation designation could be covered through an amendment to the DRECP and permits issued thereunder. Where they occur on federal public lands, these areas would be open to renewable energy development under the BLM Land Use Plan, but would require that an applicant follow a variance process before the BLM would accept their application for processing (see Section II.3.2.1.2 for details of this process). Where they occur on nonfederal lands, these areas would be open to renewable energy development upon amendment of the GCP.
- Special Analysis Areas (SAAs): These represent areas subject to ongoing analysis to inform the designation that is expected to be made for the areas prior to the signing of a National Environmental Policy Act (NEPA) Record of Decision(s) (ROD[s]) and CEQA certification for the EIR/EIS, respectively. The SAAs are known to have high value for renewable energy development and high value for ecological and cultural conservation and recreation. Following further analysis, the SAAs would be designated as either DFAs or included in the DRECP Plan-Wide Reserve Design Envelope in the Final EIR/EIS for the DRECP. Covered Activities in SAAs could be permitted for NCCP purposes only through an NCCP plan amendment. In the absence of an NCCP plan amendment, any renewable energy development in an SAA would have to be permitted for state purposes under the California Endangered Species Act (CESA) not the Natural Community Conservation Planning Act (NCCPA). If these areas are not allocated as DFAs or included in the reserve design envelope in the ROD, where they occur on federal public lands, these areas would default to DRECP Variance Lands and would be subject to those requirements (see Section II.3.2.1.2 for details of this process). Please refer to Appendix M (General Conservation Plan) for a discussion of how SAAs are being treated under the GCP.

- DRECP Variance Lands: These represent the BLM Solar Programmatic Environmental Impact Statement (PEIS) Variance Lands as screened for the DRECP and EIR/EIS based on BLM screening criteria. All lands in this category are managed by the BLM. Covered Activities could be permitted for NCCP purposes only through an NCCP plan amendment. In the absence of an NCCP plan amendment, any renewable energy development in a DRECP Variance Lands would have to be permitted for state purposes under CESA not the NCCPA. These areas would be open to renewable energy development under the applicable BLM Land Use Plan, but would require that an applicant follow a variance process before the BLM will accept their application for processing (See Section B.5 of the BLM's Solar PEIS ROD).

DRECP Plan-Wide Reserve Design Envelope, also referred to as Reserve Design Lands, for the DRECP and EIR/EIS include existing conservation areas, the BLM LUPA conservation designations, and the Conservation Planning Areas within the DRECP Plan-Wide Reserve Design Envelope for each alternative.

- **Existing Conservation Areas.** Areas of existing legislative or legal protection as described in Section I.3.4.4, including Legislatively and Legally Protected Areas (LLPAs) and Military Expansion Mitigation Lands (MEMLs).
- **BLM LUPA Conservation Designations.** Under the BLM LUPA component of the Preferred Alternative, the following conservation designations are proposed as part of the DRECP reserve: National Landscape Conservation System (NLCS), Areas of Critical Environmental Concern (ACECs), and Wildlife Allocations (see Section II.3.2 and Glossary of Terms for descriptions of these designations).
- **Conservation Planning Areas.** The portion of the DRECP Plan-Wide Reserve Design Envelope that occurs outside of existing conservation areas and BLM-administered lands. Conservation Planning Areas encompass both private lands and nonfederal public lands. A portion of the DRECP Conservation Area will be assembled by acquiring land or conservation easements from willing sellers in the Conservation Planning Areas to contribute to meeting the DRECP Biological Goals and Objectives (BGOs).

Additionally, an interagency Plan-Wide Conservation Priority Area was identified through the process of developing the Plan-Wide Reserve Design Envelope (see Section II.3.1.2.4). This area represents the highest priority area for the creation and long-term management of habitat reserves within the DRECP Plan-Wide Reserve Design Envelope for the conservation of the 37 proposed Covered Species and representative examples of the natural communities and processes that support them in the Plan Area. The interagency

Plan-Wide Conservation Priority Area was the basis for the NCCP Conceptual Plan-Wide Reserve Design of each alternative.

The BLM LUPA (Section II.3.2) provides the land use plan amendment description related to these components on BLM-administered lands and other CMAs for resources on BLM-administered lands, and it also describes the Special Recreation Management Areas (SRMAs) designations. The NCCP (Section II.3.3) for federal and nonfederal lands and the GCP for nonfederal lands (Section II.3.4) describe how Covered Activities within these Plan components would be established under the state NCCPA and Section 10(a)(1)(B) of the federal Endangered Species Act (ESA), respectively.

The Plan Area also includes other areas where renewable energy and transmission development and conservation would not be covered occur under the DRECP, including impervious and urban built-up lands, military lands, BLM Open Off-Highway Vehicle (OHV) Areas, the Johnson Valley OHV Shared Use Area, and tribal lands. Exhibit II.3-1 describes the map categories for the Preferred Alternative. Figure II.3-1 provides the Plan-wide map for the Preferred Alternative.

MAP LEGEND DEFINITIONS

NOTE: Legend items defined an this chart represent o compilotian af all legend call-outs an the olternatives maps. Not all legend items appear an each individual map.

DEVELOPMENT FOCUS AREAS

Development Focus Areas
Locatians where renewable energy generatian and tronsmission projects are covered and could be streamlined for appravol under the DRECP.

STUDY AREA LANDS

Special Analysis Areas
An interim category used in certain DRECP alternatives ta represent areas subject to angaing onalysis to inform the designatian (develapment ar conservatian) that is expected ta be made far the oreos prior to agency decisians on the DRECP.

Future Assessment Areas
Designated oreos in certain action olternotives that are subject ta future assessment far suitability for renewable energy develapment ar conservation desig-notion. The knawledge about the volue of these oreos far renewable energy development is ambiguous. The current known volue af these areas far ecalagical conservotion is maderote ta law; therefare, the areas are nat allocated to either development or canservation ond ore assigned ta future assessment ond decisions.

DRECP Variance Lands
These represent the BLM Solar PEIS Variance Lands as screened for the DRECP bosed an BLM screening criteria. The lands are potentially availoble far renewable energy development, but would not benefit fram the DRECP streamlined permitting process.

RESERVE DESIGN LANDS

Existing Conservation

Legislatively and Legally Protected Areas (LLPAs)
State and federal Wilderness Areas, National Parks, National Preserves, Natianal Wildlife Refuges, Californio State Parks, CDFW Canservation Areas (Ecalagical Reserves and Wildlife Areos), CDFW mitigotian and conservotian easement areos, privately held conservatian areas including mitigotion banks and land trust lands, and Wilderness Study Areas

Military Expansion Mitigation Lands (MEMLs)
Lands conserved as mitigation far the exponsion of Department af Defense installatians.

BLM Proposed Land Use Plan Amendment Designations

National Landscape Conservation System
Praposed canservotian designotians on BLM-administered lands with notianally significant resources manoged for conservotian purposes.

Areas of Critical Environmental Concern
Existing and proposed designotians on BLM-administered lands af noturol or cultural resaurces determined to require special manogement attention to pratect and prevent irreparable damage to important historic, culturol, or scenic values; fish and wildlife resources; or ather noturol systems or processes; or to protect life and safety fram natural hazards.

Wildlife Allocation
Designotians on BLM-administered lands where management emphasizes wildlife values.

Conservation Planning Areas

Conservation Planning Areas
In each action alternative, the portian of the DRECP Plan-Wide Reserve Design Envelope that falls outside af existing conservotian areas and BLM-administered lands. A portion af the DRECP Canservation Area will be assembled by acquiring land or canservotian easements from willing sellers in the Conservation Planning Areas to contribute to meeting the Plan-Wide Biological Goals and Objectives.

OTHER LANDS

Impervious and Urban Built-up Land
Existing developed areas.

Military
Department af Defense installatians.

Open Off Highway Vehicle (OHV) Areas – Imperial Sand Dunes
BLM Open OHV Areas within the appraved Imperial Sand Dunes Recreatian Area Manogement Plan.

Open Off Highway Vehicle (OHV) Areas
BLM Land Use Plan designotians where matarized and nan-motorized uses, including cross-country travel, is permitted.

Johnson Valley OHV Shared Use Area
An area adjacent to the Jahnsan Valley BLM Open OHV Area and Marine Carps Air Graund Combat Center Twentynine Palms designated as a shared use area.

Tribal Lands
Native American administered lands.

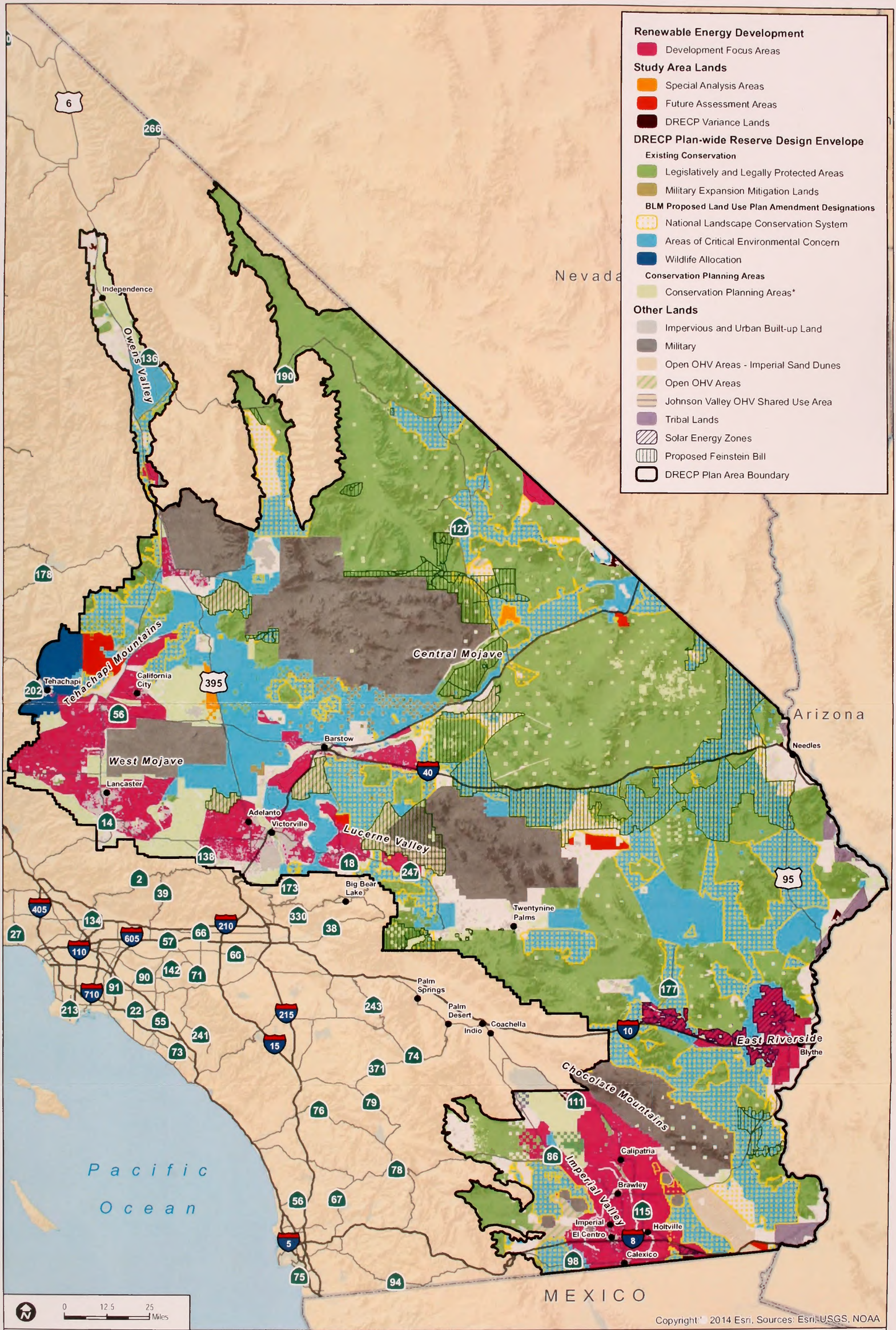
Solar Energy Zones
BLM Solar PEIS estoblished zanes of potentiol solar energy development an BLM-administered lands.

Proposed Feinstein Bill
Areas identified far conservatian, recreatian, and other purposes under the Califarnia Desert Protection Act af 2011.

DRECP Plan Area Boundary
The DRECP Plan Area including the Mojave and Sonoran/Colorada Deserts and adjacent areas within California.

Exhibit II.3-1 Map Legend Definitions for the Preferred Alternative

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.3-1

Interagency Preferred Alternative

INTENTIONALLY LEFT BLANK

Table II.3-1 provides an overview summary for the Preferred Alternative. In summary, the Preferred Alternative would include approximately 2,024,000 acres of DFAs. Study Area Lands include 128,000 acres of FAAs, 42,000 acres of SAAs, and 13,000 acres of DRECP Variance Lands. The Plan-Wide Reserve Design Envelope would include 7,662,000 acres of existing conservation areas, 6,177,000 acres of BLM LUPA conservation designations, and 1,142,000 acres of Conservation Planning Areas. Of the more than 19 million acres of the Plan Area outside of military lands, BLM Open OHV Areas, and tribal lands, there are approximately 13,565,000 acres of federally owned or administered lands and 5,420,000 of nonfederal lands. The BLM LUPA elements of the Preferred Alternative are described in Section II.3.2, the NCCP elements of the Preferred Alternative are described in Section II.3.3, and the GCP elements of the Preferred Alternative addressing nonfederal lands are described in Section II.3.4. Exhibit II.3-2 graphically displays the components of the Preferred Alternative.

Table II.3-1
Interagency DRECP Plan-Wide Preferred Alternative

Alternative Components	Acreage
DFAs	**2,024,000**
Study Area Lands	**183,000**
Future Assessment Areas	128,000
Special Analysis Areas	42,000
DRECP Variance Lands	13,000
DRECP Plan-Wide Reserve Design Envelope	**14,921,000**
Existing conservation areas	7,662,000
BLM LUPA conservation designations	6,177,000
Conservation Planning Areas	1,142,000
Urban Areas, Other Lands, and Undesignated Areas	**5,457,000**
Impervious and Urban Built-up Land	535,000
Military Lands	3,019,000
BLM Open OHV Areas	264,000
Imperial Sand Dunes, including the BLM Open OHV Area	132,000
Johnson Valley OHV Shared Use Area	56,000
Tribal Lands	129,000
Undesignated Areas	1,323,000
Plan Area Total	**22,585,000**

Notes: This Plan-wide alternative summary includes both federal and nonfederal lands. The summary specific to BLM-administered lands is provided in Section II.3.2 and the summary specific to nonfederal lands is provided in Section II.3.4. Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM-administered inholdings within the designation. The BLM LUPA would also designate approximately 2,531,000 acres of SRMAs in addition to the 193,000 acres of existing SRMAs, which are BLM designation overlays that overlap portions of the components provided in this table and described in Section II.3.2. Impervious and urban built-up lands occur within BLM LUPA

conservation designations and DFAs where not explicitly included in the urban category reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

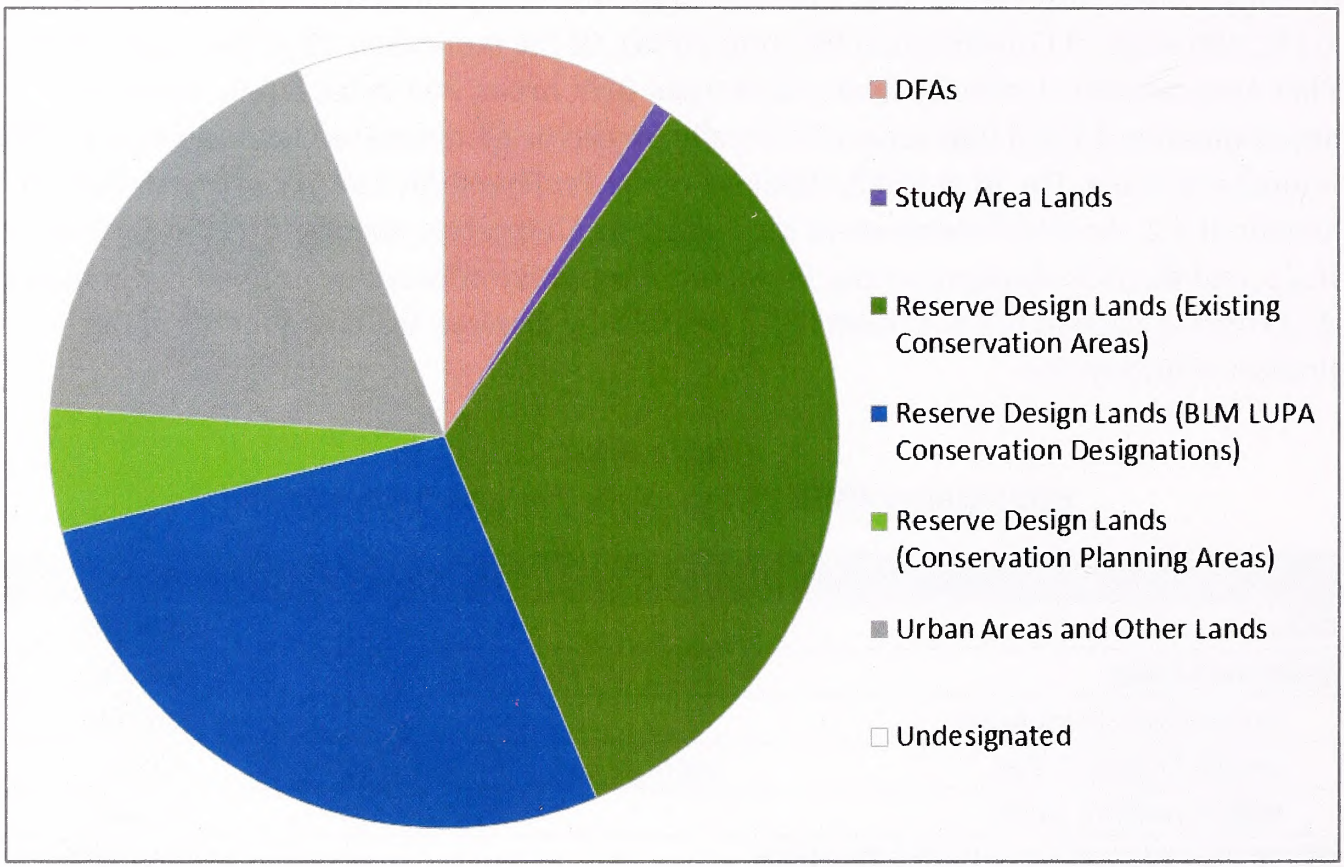


Exhibit II.3-2 Components of the Preferred Alternative

II.3.1.2 Conservation Strategy

The Plan-wide conservation strategy for the DRECP was developed through the planning process described in Volume I, Chapter I.3. The process included: (1) establishing the conservation focus on biological, cultural, recreation, and visual resources; (2) gathering baseline information; (3) identifying BGOs and goals and objectives for nonbiological resources on BLM-administered land; (4) developing a comprehensive reserve design; (4) developing biological CMAs and CMAs for nonbiological resources on BLM land; and (6) developing a MAMP. Sections II.3.1.2 and II.3.1.3 focus on the Plan-wide biological conservation strategy and a MAMP. A description of the nonbiological elements of the reserve design and BLM CMAs can be found in the BLM LUPA section (Section II.3.2).

II.3.1.2.1 Overview of the Structure and Content of the Biological Conservation Strategy for the Preferred Alternative

The following provides an overview of the structure and content of the biological conservation strategy for the Preferred Alternative.

The biological conservation focus (i.e., landscape features, natural communities, and Covered Species) and baseline information for the DRECP biological conservation strategy are described in Volume III, Chapter III.7 (affected environment for biological resources) and the Baseline Biology Report (Appendix Q). The proposed Covered Species for the DRECP are listed in Section II.3.1.2.2.

The DRECP's biological goals are the guiding principles for the DRECP biological conservation strategy. The DRECP's biological objectives provide biological conservation targets or desired conditions that articulate a desired outcome resulting from implementation of the biological conservation strategy. The process for developing the BGOs is described in Section I.3.4.3, which explains the BGOs conceptual model, defines terms, describes the BGOs development process and establishes the hierarchical structure used for the BGOs. The BGOs developed through this process guided the development of the DRECP biological conservation strategy for the Preferred Alternative and are provided in Appendix C. The step-down biological objectives describe the contribution of DRECP implementation towards achieving the Plan-wide BGOs.

The Plan-Wide Reserve Design Envelope for the Preferred Alternative delineates areas that are important for the conservation of landscape features and processes, natural communities, and Covered Species, as guided by the BGOs. The process for developing the reserve design envelope is provided in Section I.3.4.4 and Appendix D. The Reserve Design Lands of the DRECP Plan-Wide Reserve Design Envelope for the Preferred Alternative are comprised of:

- Existing Conservation (i.e., LLPAs and MEMLs)
- BLM LUPA conservation designations (i.e., NLCS, ACECs, and Wildlife Allocation)
- Conservation Planning Areas

The CMAs are the set of avoidance, minimization, and compensation actions required to achieve the conservation strategy through plan implementation. The biological CMAs are provided in Section II.3.1.2.5.

The MAMP is a key component of DRECP and is critical to ensuring that the conservation strategy is effective and that the step-down biological objectives are met. The DRECP MAMP is provided in Section II.3.1.3.

The following subsections provide more detailed information on each part of the DRECP biological conservation strategy. The conservation elements specific to the BLM LUPA are detailed in Section II.3.2.

II.3.1.2.2 DRECP Proposed Covered Species List

Covered Species are those species addressed in the DRECP for which CMAs would be implemented and for which nonfederal entities would seek authorization for incidental take under Section 10 of the federal ESA (on nonfederal land) and the NCCP Act. Under the NCCPA, Covered Species are afforded take authorization from Covered Activities and for those species on the list that are not listed at the time of Plan approval. The NCCPA allows California Department of Fish and Wildlife (CDFW) to provide assurances that if they are listed over the life of the permit, no additional mitigation or recovery actions would be required of a project proponent if Plan actions are implemented as prescribed. A total of 37 taxa are considered as Covered Species for the DRECP, as identified in Table II.3-2, and as further described and shown on Figures III.7-16 through III.7-25 in Volume III.

Table II.3-2
Proposed Covered Species List

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNDDB[3] Conservation Status
Amphibian/Reptile				
Agassiz's desert tortoise	*Gopherus agassizii*	FT	ST	G4 S2
Flat-tailed horned lizard	*Phrynosoma mcallii*	BLM/FS	CSC	G3 S2
Mojave fringe-toed lizard	*Uma scoparia*	BLM	CSC	G3G4 S3S4
Tehachapi slender salamander	*Batrachoseps stebbinsi*	BLM/FS	ST	G2 S2
Bird				
Bendire's thrasher	*Toxostoma bendirei*	BCC/BLM	CSC	G4G5 S3
Burrowing owl	*Athene cunicularia*	BLM	CSC	G4 S2
California black rail	*Laterallus jamaicensis coturniculus*	BCC/BLM	ST/FP	G4T1 S1
California condor	*Gymnogyps californianus*	FE	SE/FP	G1 S1
Gila woodpecker	*Melanerpes uropygialis*	BLM/BCC	SE	G5 S1S2
Golden eagle	*Aquila chrysaetos*	BLM	FP	G5 S3
Greater sandhill crane	*Grus canadensis tabida*	BLM/FS	ST/FP	G5T4 S2
Least Bell's vireo	*Vireo bellii pusillus*	FE/BCC	SE	G5T2 S2
Mountain plover	*Charadrius montanus*	BCC/BLM	CSC	G2 S2?
Swainson's hawk	*Buteo swainsoni*	BLM/FS	ST	G5 S2

Table II.3-2
Proposed Covered Species List

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNDDB[3] Conservation Status
Tricolored blackbird	*Agelaius tricolor*	FC/BCC/BLM	CSC	G2G3 S2
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FC/FS/BCC/BLM	SE	G5T3Q S1
Willow flycatcher (including southwestern)	*Empidonax traillii* (including *extimus*)	Southwestern: FE	SE	G5 S1S2 Southwestern : G5T1T2 S1
Yuma clapper rail	*Rallus longirostris yumanensis*	FE/BCC	ST/FP	G5T3 S1
Fish				
Desert pupfish	*Cyprinodon macularius*	FE	SE	G1 S1
Mohave tui chub	*Siphateles (Gila) bicolor mohavensis*	FE	SE/FP	G4T1 S1
Owens pupfish	*Cyprinodon radiosus*	FE	SE/FP	G1 S1
Owens tui chub	*Siphateles (Gila) bicolor snyderi*	FE	SE	G4T1 S1
Mammal				
Desert bighorn sheep	*Ovis canadensis nelsoni*	BLM	FP*	G4T4 S3
California leaf-nosed bat	*Macrotus californicus*	BLM/FS	CSC	G4 S2S3
Mohave ground squirrel	*Xerospermophilus mohavensis*	BLM	ST	G2G3 S2S3
Pallid bat	*Antrozous pallidus*	BLM/FS	CSC	G5 S3
Townsend's big-eared bat	*Corynorhinus townsendii*	BLM/FS	CSC/ Candidate	G4 S2S3
Plant				
Alkali mariposa-lily	*Calochortus striatus*	BLM	(CRPR 1B.2)	G2 S2
Bakersfield cactus	*Opuntia basilaris* var. *treleasei*	FE	SE (CRPR 1B.1)	G5T3 S3
Barstow woolly sunflower	*Eriophyllum mohavense*	BLM	(CRPR 1B.2)	G2 S2
Desert cymopterus	*Cymopterus deserticola*	BLM	(CRPR 1B.2)	G2 S2
Little San Bernardino Mountains linanthus	*Linanthus maculatus*	BLM	(CRPR 1B.2)	G2 S2
Mojave monkeyflower	*Mimulus mohavensis*	BLM	(CRPR 1B.2)	G2 S2
Mojave tarplant	*Deinandra mohavensis*	BLM	SE (CRPR 1B.3)	G2G3 S2S3
Owens Valley checkerbloom	*Sidalcea covillei*	BLM	SE (CRPR 1B.1)	G3 S3

Table II.3-2
Proposed Covered Species List

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNDDB[3] Conservation Status
Parish's daisy	*Erigeron parishii*	FT	(CRPR 1B.1)	G2 S2
Triple-ribbed milk-vetch	*Astragalus tricarinatus*	FE	(CRPR 1B.2)	G1 S1

Notes:

1 Federal Status—FE: Federally Endangered; FT: Federally Threatened; FC: Federal Candidate Species; FS: Forest Service sensitive; BLM: Bureau Land Management sensitive; BCC: Bird of Conservation Concern

2 State Status—SE: State Endangered; ST: State Threatened; CSC: California Species of Concern; FP: Fully Protected; *: limited hunting; CRPR: California Rare Plant Rank. See https://www.cnps.org/cnps/rareplants/ranking.php for an explanation of CRPRs.

3 CNDDB = California Natural Diversity Database. See http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/spplants.pdf, page v for an explanation of these ranks.

Additionally, the DRECP conservation strategy addresses natural communities that occur in the Plan Area. There are 31 natural communities, as identified in Table I.3-3 of Volume I and as further described in Volume III and shown on Figures III.7-3 through III.7-13.

II.3.1.2.3 Biological Goals and Objectives

The Plan-wide BGOs provide the broad guiding principles and define the desired outcome of the conservation strategy. The Plan-wide BGOs are described in Section I.3.4.3 and are provided in Appendix C at the landscape, natural community, and species levels. The Plan-wide BGOs are common to and apply to each of the DRECP alternatives. The Step-down Biological Objectives describe how implementation of the DRECP would contribute to meeting the Plan-wide BGOs. Because the DRECP does not address all activities and uses in the Plan Area, the DRECP cannot bear the full burden of achieving Plan-wide BGOs. For that reason, the Step-down Biological Objectives represent the desired conservation for each biological resource that would result from DRECP implementation. The Step-down Biological Objectives are also provided in Appendix C.

II.3.1.2.4 DRECP Plan-Wide Reserve Design Envelope

The DRECP Plan-Wide Reserve Design Envelope for the Preferred Alternative was developed based on the biological reserve design process described in Section I.3.4.4. The DRECP Plan-Wide Reserve Design Envelope is the mapped expression of Plan-wide BGOs. Additionally, an interagency Plan-Wide Conservation Priority Area has been identified. This area represents the highest priority area for the creation and long-term management of habitat reserves for the conservation of the 37 proposed Covered Species and representative examples of the natural communities and processes that support them in the Plan Area. The interagency Plan-Wide Conservation Priority Area was the basis for the NCCP Conceptual Plan-Wide Reserve Design of each alternative.

Overall, the DRECP Plan-Wide Reserve Design Envelope for the Preferred Alternative would cover 78% of the Plan Area (excluding military lands, tribal lands, and BLM Open OHV Areas), which includes 7,662,000 acres of existing conservation areas, 6,117,000 acres of BLM LUPA conservation designations, and 1,142,000 acres of Conservation Planning Areas. Over half of the DRECP Plan-Wide Reserve Design Envelope for the Preferred Alternative is made up of existing conservation areas (i.e., LLPAs and MEMLs). Approximately 41% of the DRECP Plan-Wide Reserve Design Envelope for the Preferred Alternative is made up of existing and proposed BLM LUPA conservation designations including combinations of ACECs, NLCS, and Wildlife Allocations. Approximately 8% of the DRECP Plan-Wide Reserve Design Envelope for the Preferred Alternative is comprised of Conservation Planning Areas on private and nonfederal lands.

The interagency Plan-Wide Conservation Priority Area within the reserve design envelope covers approximately 1,847,000 acres. This includes 1,655,000 acres of BLM LUPA conservation designations (1,182,000 acres on BLM-administered lands and 473,000 acres of non-BLM inholdings) and 193,000 acres of Conservation Planning Areas.

The DRECP Plan-Wide Reserve Design Envelope for the Preferred Alternative is comprised of an interconnected network of federal and nonfederal lands that spans seven counties, multiple ownerships, and ten ecoregion subareas of the Mojave and Colorado/Sonoran deserts of California. Figure II.3-2 shows the DRECP Plan-Wide Reserve Design Envelope for the Preferred Alternative and Appendix G provides figures of the reserve design envelope for each ecoregion subarea in the Plan Area. Table II.3-3 through Table II.3-5 shows the DRECP Plan-Wide Reserve Design Envelope for the Preferred Alternative by county, ownership, and ecoregion subarea, respectively.

Table II.3-3
DRECP Plan-Wide Reserve Design Envelope for the Preferred Alternative by County

County	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Imperial	274,000	730,000	137,000	1,141,000
Inyo	1,921,000	612,000	133,000	2,666,000
Kern	135,000	537,000	169,000	841,000
Los Angeles	6,000	33,000	250,000	289,000
Riverside	982,000	605,000	52,000	1,639,000
San Bernardino	4,145,000	3,600,000	395,000	8,140,000
San Diego	199,000	0	6,000	205,000
Total	**7,662,000**	**6,117,000**	**1,142,000**	**14,921,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM-administered inholdings within the designation. These include both existing and proposed conservation

designations. The reserve design envelope also includes an interagency Plan-Wide Conservation Priority Area that covered 1,847,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

Table II.3-4
DRECP Plan-Wide Reserve Design Envelope for the Preferred Alternative by Ownership Class

Ownership Class	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Federal Lands				
BLM-administered land	3,279,000	4,908,000	-	8,187,000
Other federal land	3,949,000	9,000	62,000	4,021,000
Nonfederal Lands				
Private land	31,000	959,000	807,000	1,798,000
State and local public land	403,000	240,000	272,000	915,000
Total	**7,662,000**	**6,117,000**	**1,142,000**	**14,921,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM-administered inholdings within the designation. These include both existing and proposed conservation designations. The reserve design also includes an interagency Plan-Wide Conservation Priority Area that covered 1,847,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.3-5
DRECP Plan-Wide Reserve Design Envelope for the Preferred Alternative by Ecoregion Subarea

Ecoregion Subarea	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Cadiz Valley and Chocolate Mountains	842,000	1,348,000	62,000	2,253,000
Imperial Borrego Valley	355,000	476,000	133,000	964,000
Kingston and Funeral Mountains	1,767,000	524,000	73,000	2,364,000
Mojave and Silurian Valley	786,000	549,000	44,000	1,379,000
Owens River Valley	32,000	158,000	95,000	285,000

Table II.3-5
DRECP Plan-Wide Reserve Design Envelope for the Preferred Alternative by Ecoregion Subarea

Ecoregion Subarea	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Panamint Death Valley	1,253,000	310,000	16,000	1,578,000
Pinto Lucerne Valley and Eastern Slopes	739,000	494,000	77,000	1,310,000
Piute Valley and Sacramento Mountains	423,000	468,000	27,000	917,000
Providence and Bullion Mountains	1,305,000	770,000	113,000	2,188,000
West Mojave and Eastern Slopes	162,000	1,020,000	502,000	1,684,000
Total	**7,662,000**	**6,117,000**	**1,142,000**	**14,921,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM-administered inholdings within the designation. These include both existing and proposed conservation designations. The reserve design also includes an interagency Plan-Wide Conservation Priority Area that covered 1,847,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Existing Conservation Areas

The Plan Area encompasses existing conservation areas that include LLPAs and MEMLs, which include among other designations Wilderness Areas, Wilderness Study Areas, National Parks, National Preserve, and California State Parks. LLPAs serve as the building blocks of the DRECP reserve design with existing boundaries and management regimes around which the BLM LUPA conservation designations and Conservation Planning Areas were designed. Existing conservation areas are the same for all alternatives. A full description of the existing conservation areas is provided in Section I.3.4.4 under the reserve design process. The existing conservation areas of the reserve design are shown on Figures II.3-2 and the ecoregion subarea maps of the reserve design in Appendix G.

BLM LUPA Conservation Designations

The BLM LUPA conservation designations are a critical component of the reserve design for the DRECP. These include existing and newly proposed NLCS designations, ACEC designations and Wildlife Allocations. The land unit names included in BLM LUPA conservation designations in the reserve design by ecoregion subarea are provided in Section II.3.2 and Appendix L. The BLM LUPA conservation designations component of the reserve design envelope is shown on Figures II.3-2 and the ecoregion subarea maps of the reserve design envelope in Appendix G.

Conservation Planning Areas

Conservation Planning Areas are the portions of the reserve design envelope located outside of existing conservation areas and BLM-administered lands. Conservation Planning Areas include both nonfederal public and private lands. Reserve areas would be created within Conservation Planning Areas by acquiring land or conservation easements from willing sellers to provide compensatory mitigation for Covered Activities to contribute to meeting BGOs. Conservation Planning Areas (and nonfederal inholdings within BLM LUPA conservation designations) within the interagency Plan-Wide Conservation Priority Area have been prioritized for conservation. The Conservation Planning Areas component of the reserve design envelope is shown on Figures II.3-2 and the ecoregion subarea maps of the reserve design envelope in Appendix G.

II.3.1.2.5 Biological Conservation and Management Actions

The biological CMAs are a set of actions that are required for the conservation of the biological resources during implementation of Covered Activities and for the management of the DRECP reserve system in the Plan Area. The CMAs listed in this section describe the specific actions that would be implemented, where and when certain actions would be required, and who is responsible for performing each action. This section also explains the different types of biological CMAs, the organizational structure of the biological CMAs, and the context of the biological CMAs in the overall conservation strategy for DRECP. Additional biological CMA documentation can be found in Appendix H.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.3-2

Preferred Alternative - Plan-wide Reserve Design Envelope

INTENTIONALLY LEFT BLANK

Biological CMAs Context in the Conservation Strategy

The biological CMAs are a critical component of the DRECP biological conservation strategy that serve to avoid and minimize impacts to biological resources, contribute to the assembling of the reserve through compensation for the loss of biological resources, and implement other conservation actions that benefit Covered Species and natural communities within the Plan Area. The BGOs (Appendix C) guided the development of the biological CMAs, will build on the conservation provided by existing conservation areas and BLM LUPA conservation designations to contribute to achieving the DRECP's BGOs. The outcomes of the biological CMAs also inform MAMP actions (Section II.3.1.3), which would monitor both compliance with and effectiveness of the biological CMAs and adapt them as necessary. This iterative process would allow for the continual improvement of the CMAs, based on potential changes in information to provide effective conservation of biological resources in the Plan Area.

Biological CMAs Organization

The biological CMAs described below are incorporated into the alternatives for the LUPA, NCCP, and GCP but will not be repeated in these plan specific sections. These CMAs are designed to be implemented by entities seeking a right-of-way (ROW) grant (for Covered Activities and non-Covered Activities) on BLM land, by BLM implementing activities on its land, and by NCCP and GCP permittees.

The biological CMAs are organized into two main groups that include avoidance and minimization CMAs (Section II.3.1.2.5.1 through Section II.3.1.2.5.6) and compensation CMAs (Section II.3.1.2.5.7). The general purpose, organization, and implementation requirements for each of these categories are described in detail in their individual sections and are summarized below.

- **Avoidance and Minimization CMAs.** These biological CMAs are actions intended to reduce potential impacts to biological resources in the Plan Area. The avoidance and minimization CMAs are generally organized by the type of biological resource that would be affected by Covered Activities; such resources include Covered Species, natural communities, landscape-level processes (e.g., hydrology and habitat linkages), or all biological resources in the Plan Area (Plan-wide CMAs). These CMAs are also further organized by the specific location where the Covered Activities would occur (e.g., in DFAs), and when applicable, by the type of Covered Activity (e.g., solar energy projects) and during what project phase the Covered Activity would occur (e.g., siting, design, construction, operation, and decommissioning phases).

- **Compensation CMAs.** The compensation CMAs are actions that would offset impacts to biological resources due to Covered Activities. These biological CMAs describe the method for calculating compensation requirements, which are based on a standard compensation ratio and compensation ratio exceptions (i.e., for impacts where exceptions to the standard compensation ratio would apply). The compensation CMAs also describe allowable forms of compensation, including acquisition and non-acquisition compensation actions (e.g., habitat restoration or enhancement as described in Appendix H).

In these two categories there are specific biological CMAs that each have a unique biological CMA code that corresponds to that distinct CMA. Exhibit II.3-3 depicts the organizational structure of the biological CMAs and how the CMA coding system follows the division of the two main categories of avoidance and minimization CMAs and compensation CMAs, which are described above. In this exhibit the CMA code for each of these three main categories, and their subsequent subcategories, are shown in brackets. The part of the CMAs code in these brackets identifies either in what part of the biological CMAs structure or in what portion of the document that particular CMA can be found. The CMAs code in the bracket also provides information regarding what biological resources a CMA would apply to or where a specific CMA would apply. For example, the CMA code AM-DFA-BAT-2 identifies that this is an avoidance and minimization CMA, applicable in the DFAs, and is specific to bat Covered Species. Additionally, the CMA code always ends in a number that makes each CMA code unique and applicable to one specific biological CMA.

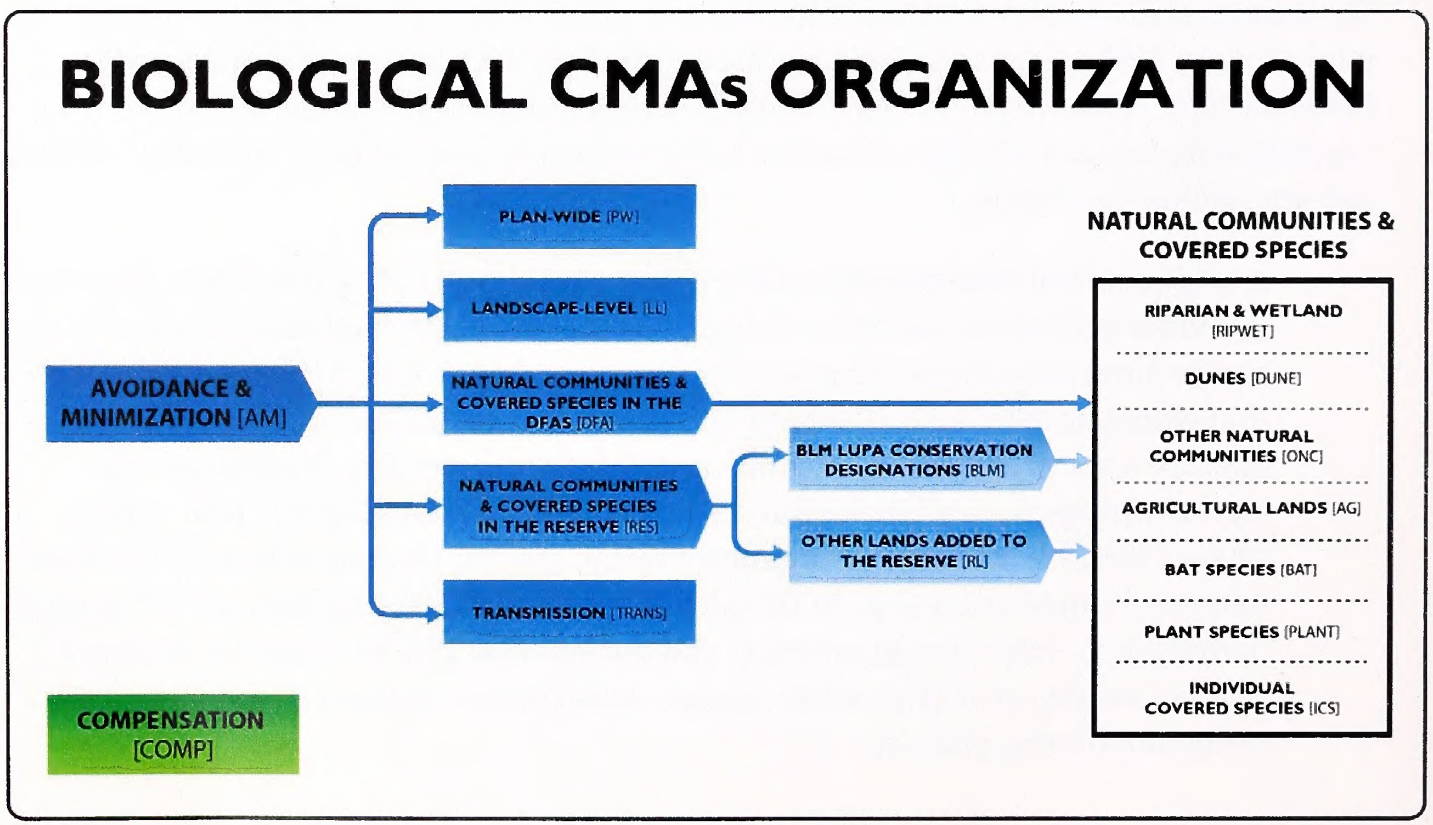


Exhibit II.3-3 Biological CMAs

II.3.1.2.5.1 Avoidance and Minimization CMAs

As described above, the avoidance and minimization biological CMAs are a crucial part of the biological CMAs and the DRECP biological conservation strategy. These biological CMAs are actions that would be implemented as part of Plan implementation and are intended to preclude potential impacts to biological resources or reduce potential impacts to biological resources in the Plan Area resulting from Covered Activities. The avoidance and minimization CMAs follow a similar tiered approach as the BGOs and include Plan-wide, landscape-level, natural community-specific, and species-specific CMAs. In addition to this hierarchical relationship, the avoidance and minimization CMAs are also organized based on the location factors of being within the DFAs or reserve. Both the relational hierarchy and the locational factors of the avoidance and minimization CMAs are described in detail below.

Relational Hierarchy

As shown in Exhibit II.3-3, the avoidance and minimization CMAs have a hierarchical structure similar to the BGOs that is organized by Plan-wide, landscape-level, natural community, and Covered Species CMAs. Plan-Wide CMAs (Section II.3.1.2.5.2) are considered to be "umbrella actions" that would be required for Covered Activities throughout the Plan Area. These CMAs may be considered standard practices for ensuring appropriate conservation and management through implementation of avoidance and minimization for Covered Activities. These avoidance and minimization actions would be a crucial component to conservation and management, along with the compensation and monitoring actions (Section II.3.1.3) for Covered Activities. Landscape-level CMAs (Section II.3.1.2.5.3) would apply to processes that occur over a large geographical extent such as habitat connectivity or Aeolian sand transport and would be required for Covered Activities that could interface with these processes throughout the Plan Area. The avoidance and minimization CMAs that apply to specific natural communities are organized by their location in the DFAs (Section II.3.1.2.5.4) or in the reserve (Section II.3.1.2.5.5). Similarly, avoidance and minimization CMAs for Covered Species are organized by location in the DFAs (Section II.3.1.2.5.4) or the reserve (Section II.3.1.2.5.5). Within both the natural community and Covered Species CMAs for the DFAs and for the reserve, the natural communities and Covered Species are grouped based on their general associations (e.g., Riparian and Wetland Natural Communities and Covered Species). These groupings are identified by a code specific to their grouping (e.g., RIPWET for Riparian and Wetland Natural Communities and Covered Species) and allow for the consolidation of some CMAs, due to the overlap and co-benefits of some avoidance and minimization CMAs to an entire group of natural communities and/or Covered Species.

The avoidance and minimization CMAs structure nests the Covered Species CMAs within the natural community CMAs, the landscape-level CMAs, and the Plan-wide CMAs to the extent possible. For example, at the Plan-wide CMAs scale all Covered Activities would implement standard practices to protect water quality while the landscape-level CMAs would focus on maintaining the function of groundwater flows, surface water flows, and hydrogeomorphic processes that would support the conservation of riparian and wetland areas. Without the Plan-wide and landscape-level efforts to conserve water quality and hydrologic function, the conservation of the riparian and wetland natural communities and Covered Species would not be ensured.

Within both the DFAs and the reserve, the biological CMAs for natural communities and Covered Species are also grouped based on CMAs that overlap and provide co-benefits to the natural communities and Covered Species in that group. For example, the consolidated riparian and wetland natural community grouping contains common setback CMAs for riparian and wetland natural communities that provides conservation benefits to the Covered Species that utilized those habitats. Additionally, the Covered Species generally associated with riparian and wetland areas may be further categorized into subgroups, which share overlapping CMAs that provide co-benefits to each Covered Species in that subgroup. For instance, the riparian and wetland bird Covered Species are grouped together and share common survey requirement CMAs.

This hierarchical structure that groups natural communities and Covered Species and then nests these groupings within the landscape-level and Plan-wide CMAs would sometimes account for all of the avoidance and minimization CMAs for a particular natural community or Covered Species and no additional avoidance and minimization CMAs specific to that natural community or Covered Species would be necessary. For those natural communities or Covered Species that would require additional avoidance and minimization CMAs that were not fully addressed at the Plan-wide or landscape-level, then additional avoidance and minimization CMAs specific to that natural community or Covered Species are provided.

Although transmission projects are considered in the biological CMAs for Covered Activities, there are some instances where additional CMAs could be required to accommodate the specific attributes of transmission as a Covered Activity that would be allowable under the Plan in both the DFAs and reserve. Generally, transmission projects within the DFAs would implement the same biological CMAs for Covered Activities in the DFAs and transmission projects in the reserve would implement the same biological CMAs for Covered Activities in the reserve. The additional CMAs that would apply to transmission projects covered by the Plan throughout the entire Plan Area are included in Section II.3.1.2.5.6 at the end of the avoidance and minimization CMAs.

Locational Factors

The natural community and Covered Species level CMAs are organized based on their location within the DFAs or reserve, as shown in Exhibit II.3-4. Some Covered Activities could require additional or different natural community and/or Covered Species CMAs depending on their location within the DFAs or the reserve. The natural community and Covered Species level CMAs are presented first for Covered Activities that would occur within the DFAs and are organized based on the combined groupings described in Section II.3.1.2.5.4.

For Covered Activities allowed in the reserve (i.e., transmission projects), the applicable natural community and Covered Species level CMAs are described in Section II.3.1.2.5.5. Unless specifically stated otherwise, the CMAs for natural communities and Covered Species in the DFAs would be required to be implemented for transmission projects within the reserve. In some situations the natural community and Covered Species level CMAs for the DFAs would be sufficient for avoidance and minimization of transmission projects in the reserve and no additional natural community or Covered Species level CMAs would be required. In other instances additional natural community and Covered Species level CMAs for transmission projects in the reserve would be required to avoid and minimize potential impacts to certain biological resources. These CMAs are organized between those that apply on the BLM LUPA conservation designations and those that apply on Lands Added to the Reserve (non-BLM LUPA conservation designations). Furthermore, the natural community and/or Covered Species CMAs in this organizational structure could also be subdivided by whether they would be implemented in the siting, design, pre-construction, construction, and decommissioning phase or the operations phase of a project, as applicable.

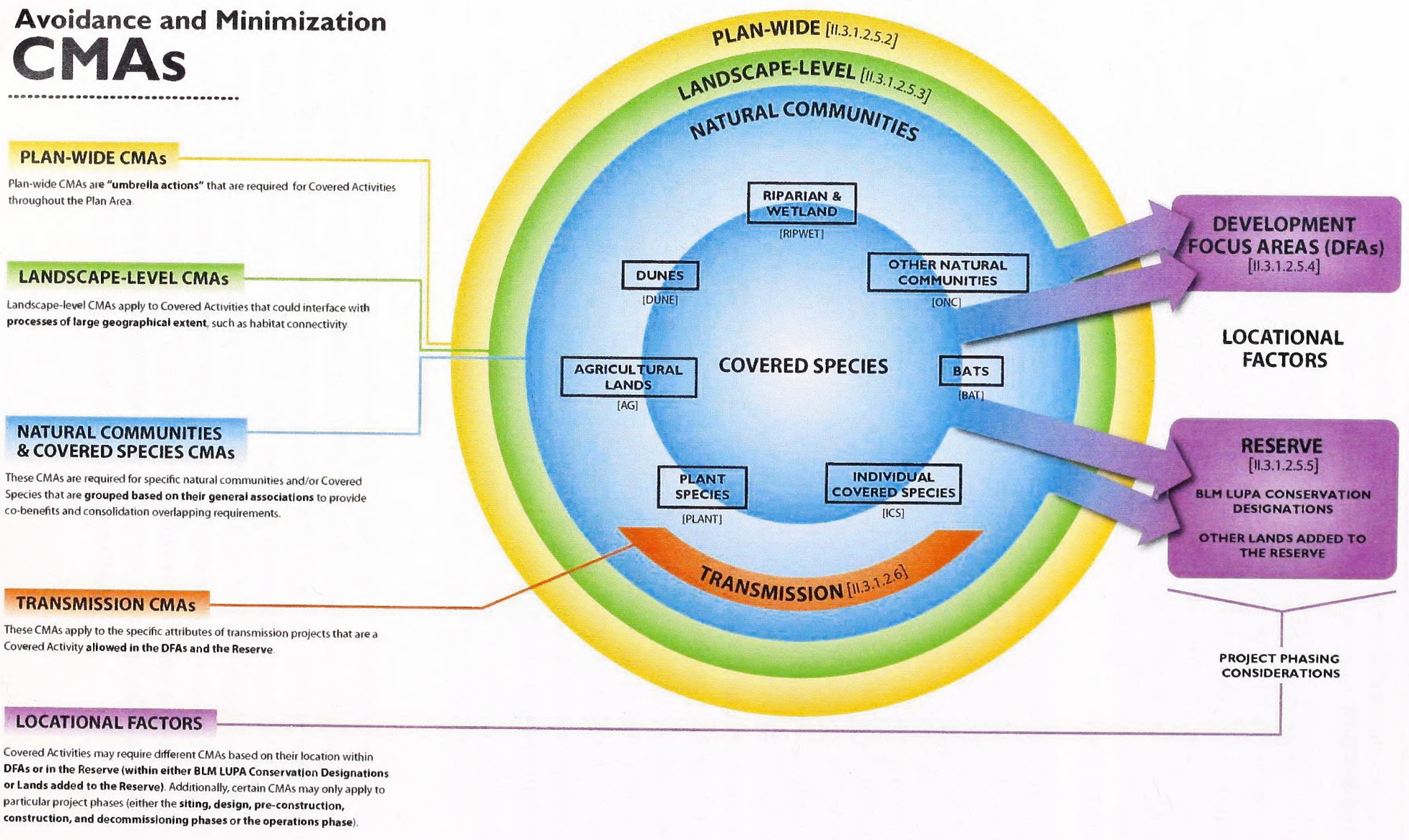


Exhibit II.3-4 Avoidance and Minimization CMAs

II.3.1.2.5.2 Plan-Wide Avoidance and Minimization CMAs

As described above, Plan-wide CMAs are considered to be "umbrella actions" or standard practices for ensuring appropriate conservation and management through implementation of avoidance and minimization for Covered Activities. These CMAs would be required for all Covered Activities throughout the entire Plan Area. As such, the Plan-wide CMAs would provide a consistent level of conservation throughout the Plan Area through a required foundational level of general avoidance and minimization CMAs. These include measures that would benefit biological resources through standard seasonal restrictions, siting and design considerations, techniques to preserve water quality, soil and erosion control measures, methods to control invasive species, and more. The following constitute the Plan-wide avoidance and minimization CMAs:



Survey Requirements and Standards

AM-PW-1: The Covered Species and natural community CMAs will be consulted to determine if specific surveys are required and to determine the specific standards for any Covered Species surveys or natural community assessments. The general process is described below for natural communities and Covered Species.

Natural Communities

- Conduct a habitat assessment (see Glossary of Terms) of natural communities for all Covered Activities using the most current information, data sources, and tools (e.g., DRECP land cover mapping, aerial photos, CDFW vegetation layers, other sources of digitized data, and reconnaissance site visits) to identify and/or delineate the natural communities, rare alliances, and special features (e.g., Aeolian sand transport resources, Joshua tree, microphyll woodland communities, seeps) present. As specified in the natural community CMAs, site-specific surveys will be conducted to identify and map these special features.

- Comply with the most recent and applicable assessment protocols and guidance documents for natural communities and jurisdictional waters and wetlands that have been approved by the DRECP Coordination Group (see Glossary of Terms) and responsible regulatory agencies (see Appendix H).

Covered Species

- Conduct a habitat assessment (see Glossary of Terms) of species' suitable habitat for all Covered Activities using the most current information, data sources, and tools (e.g., DRECP land cover mapping, aerial photos, DRECP species models, and reconnaissance site visits) to identify suitable habitat (see Glossary of Terms) for Covered Species. If required by the relevant species specific CMAs, conduct any subsequent protocol or adequate presence/absence surveys to identify Covered Species occupancy status and a more detailed mapping of suitable habitat to inform siting and design considerations.
- If in agricultural lands, conduct a habitat assessment and map burrowing owl habitat (see Section II.3.1.2.5.3 and II.3.1.2.5.4 for burrowing owl CMAs) and assess overwintering habitat characteristics for mountain plover to determine compensation requirements for agricultural land or nonagricultural land.
    - If required by the relevant species specific CMAs, conduct pre-construction surveys (see Glossary of Terms) and/or clearance surveys (see Glossary of Terms) to avoid and minimize direct and indirect effects to Covered Species.
- Implement current survey protocols for applicable Covered Species that have been approved by the DRECP Coordination Group at the time the surveys are required (see Appendix H).
    - Presence/absence survey (see Glossary of Terms) protocols will be submitted to the DRECP Coordination Group for review, comment, and approval prior to implementation.
    - The results of biological surveys, including field data sheets, will be submitted to the DRECP Coordination Group.

Biological Monitoring

AM-PW-2: Designated Biologists (see Glossary of Terms), approved by the DRECP Coordinating Group, will conduct daily biological monitoring during pre-construction, construction, and decommissioning Covered Activities for all work areas associated with Covered Activities to ensure that avoidance and minimization measures are implemented and are effective.

Resource Setback Standards

AM-PW-3: Resource setbacks (see Glossary of Terms) have been identified to avoid and buffer certain resources from adverse effects. Setbacks are not considered additive and are measured as specified in the applicable CMA. Generally, setbacks (which range in distances for different biological resources) for the appropriate resources are measured from:

- The edge of each of the DRECP natural communities, including but not limited to those in the riparian or wetland natural community groups (as defined by alliances within the natural community descriptions and mapped based on the natural community habitat assessments described in **AM-PW-1**).
- The edge of the mapped riparian vegetation or the Federal Emergency Management Agency (FEMA) 100-year floodplain, whichever is greater, for the Mojave River.
- The edge of the agricultural canal or drain feature or the Palos Verde Irrigation District and Imperial Irrigation District ROW for agricultural irrigation system features.
- The edge of the vegetation extent for plant Covered Species.
- The edge of suitable habitat or active nest substrates for the appropriate Covered Species.

Seasonal Restrictions

AM-PW-4: For Covered Species implement all species-specific seasonal restrictions on pre-construction, construction, operations, and decommissioning related Covered Activities.

- Species-specific seasonal restriction dates are described in the applicable Covered Species CMAs.
- Pre-construction, construction, and decommissioning Covered Activities subject to seasonal restrictions will be restricted during the breeding, nesting, lambing, fawning, or roosting seasons of species that are breeding, nesting, lambing, fawning, or roosting within the distance at which noise from construction activities subject to seasonal restrictions would affect them.
- Alternatively, to avoid a seasonal restriction associated with visual disturbance, installation of a visual barrier may be evaluated on a case-by-case basis that will result in the breeding, nesting, lambing, fawning, or roosting species not being affected by visual disturbance from construction activities subject to seasonal restriction.
- All pre-construction, presence/absence, and clearance surveys as well as any applicable translocation activities will be performed within the appropriate seasonal time frames and in accordance with the most up-to-date guidance approved by the DRECP Coordination Group.

Worker Education

AM-PW-5: All Covered Activities will implement a worker education program that meets the approval of the DRECP Coordination Group. The program will be carried out during all phases of the project (site mobilization, ground disturbance, grading, construction, operation, closure/decommissioning or project abandonment, and restoration/reclamation activities). The worker education program will provide interpretation for non-English speaking workers, and provide the same instruction for new workers prior to their working on site. At a minimum, the program will contain information about:

- Site-specific biological and nonbiological resources.
- Information on the legal protection for protected resources and penalties for violation of federal and state laws and administrative sanctions for failure to comply with DRECP CMA requirements intended to protect site-specific biological and nonbiological resources.
- The required DRECP and project-specific measures for avoiding and minimizing effects during all project phases.
- Reporting requirements and measures to follow if protected resources are encountered, including potential work stoppage and requirements for notification of the Designated Biologist.
- Project-site speed limits and penalties.
- Measures that personnel can take to promote the conservation of biological and nonbiological resources, including looking for animals in open holes and trenches and closing them when not in use or draining evaporation ponds when not in use.

Subsidized Predators Standards

AM-PW-6: Subsidized predator standards, approved by the DRECP Coordination Group, will be implemented during all phases of the project to manage predator food subsidies, water subsidies, and breeding sites including the following:

- Common Raven management actions will be implemented for all projects to address food and water subsidies and roosting and nesting sites specific to the Common Raven. These include identification of monitoring reporting procedures and requirements; strategies for refuse management; as well as design strategies and passive repellant methods to avoid providing perches, nesting sites, and roosting sites for Common Ravens.
- The application of water and/or other palliatives for dust abatement in construction areas and during project operations and maintenance will be done

with the minimum amount of water necessary to meet safety and air quality standards and in a manner that prevents the formation of puddles, which could attract wildlife predators.

- Covered Activities will take actions to not introduce, dispose of, or release any non-native species into areas of native habitat, suitable habitat, and natural or artificial waterways/water bodies.
- All work areas will be kept free of trash and debris. Particular attention will be paid to "micro-trash" (including such small items as screws, nuts, washers, nails, coins, rags, small electrical components, small pieces of plastic, glass or wire, and any debris or trash that is colorful or shiny) and organic waste that may subsidize predators. All trash will be covered, kept in closed containers, or otherwise removed from the project site at the end of each day or at regular intervals prior to periods when workers are not present at the site.
- In addition to implementing the measures above on project sites, each project would provide compensatory mitigation that contributes to Plan-wide raven management.

Restoration of Areas Disturbed by Construction Activities But Not Converted by Long-Term Covered Activities

AM-PW-7: Where natural communities or species habitats are affected by ground-disturbance and/or vegetation removal during pre-construction, construction, operations, and decommissioning related Covered Activities but are not converted by long-term (i.e., more than two years of disturbance) ground disturbance, restore these areas following the DRECP Habitat Restoration Standards, approved by the DRECP Coordination Group and following BLM policies and procedures when on BLM-administered lands, prior to natural community or species habitat disturbance, described below:

- Implement site-specific habitat restoration actions for the areas affected by Covered Activities including specifying and using the appropriate seed (e.g., certified weed-free, native, and locally and genetically appropriate seed), materials (e.g., topsoil of the same original type on site or that was previously stored by soil type after being salvaged during excavation and construction activities), equipment, timing (e.g., appropriate season), location (e.g., in the appropriate soil substrate for the species), success criteria, monitoring measures, and contingency measures, relevant for restoration, which includes seeding that follows BLM policy when on BLM administered lands (see Appendix H).
- Minimize natural vegetation removal and cut or mow vegetation rather than removing entirely.

- Salvage and relocate cactus, nolina, and yucca from the site prior to disturbance from Covered Activities using standard protocols and BLM protocols when on BLM administered lands. To the maximum extent practicable for short-term disturbed areas, the cactus and yucca will be re-planted back to the original site.
- Restore and reclaim short-term disturbed areas, including pipelines, transmission projects, staging areas, and short-term construction-related roads immediately following completion of construction activities to reduce the amount of habitat converted at any one time and promote recovery to natural habitats and vegetation.

Closure and Decommissioning Standards

AM-PW-8: All Covered Activities will specify and implement project-specific closure and decommissioning actions that meet the approval of the DRECP Coordination Group, that will be carried out during all phases of the project, and that at a minimum address the following:

- Specifying and implementing the methods, timing (e.g., criteria for triggering closure and decommissioning actions), criteria for success (including quantifiable and measureable criteria), cost, and funding mechanism to ensure sufficient funds are available (e.g., performance bond or similar mechanism) for removal of power plant facilities, transmission projects, roads, fencing, and other infrastructure when they are no longer used or useful and the appropriate restoration of these areas.
- Recontouring of areas that were substantially altered from their original contour or gradient and installing erosion control measures in disturbed areas where potential for erosion exists.
- Storing soil and vegetation as well as restoration of soil profiles that will support and maintain native plant communities and native wildlife species.
- Vegetation restoration actions will identify and use native vegetation composition, native seed composition, and the diversity to values commensurate with the natural ecological setting.

DRECP Standard Practices

The following DRECP Standard Practices would be implemented for Covered Activities during pre-construction, construction, operation, and decommissioning:

Standard Practices for Hydrology and Water Resources

AM-PW-9: Implement the following standard practices for hydrology and water resources:

- Implement construction site standard practices to prevent toxic chemicals, hazardous materials, and other fluids from entering natural communities, streams, washes, and distributary networks through water runoff, erosion, and sediment transport by at a minimum implementing the following:
- Vehicles and other equipment will be maintained in proper working condition and only stored in designated containment areas where runoff is collected or controlled and that are located outside of streams, washes, and distributary networks to minimize accidental fluids and hazardous materials spills.
- Hazardous material leaks, spills, or releases will be immediately cleaned and equipment will be repaired upon identification. Removal and disposal of spill and related clean-up materials will occur at an approved off-site landfill.
- Maintenance and operations vehicles will carry the appropriate equipment and materials to isolate, clean up, and repair any hazardous material leaks, spills, or releases.
- All Covered Activities will implement project-specific drainage, erosion, and sedimentation control actions, which meet the approval of the DRECP Coordination Group and the applicable regulatory agencies, which will be carried out during all phases of the project. At a minimum these actions will address measures to ensure the proper protection of water quality, site-specific stormwater and sediment retention, and design of the project to minimize site disturbance, including the following:
    - Identify site-specific surface water runoff patterns and implement measures to prevent excessive and unnatural soil deposition and erosion.
    - Implement measures to maintain natural drainages and to maintain hydrologic function in the event drainages are disturbed.
    - Reduce the amount of area covered by impervious surfaces through use of permeable pavement or other pervious surfaces. Direct runoff from impervious surfaces into retention basins.
    - Stabilize disturbed areas following grading by moisturizing and compacting the soils.
    - Minimize irrigation runoff by avoiding the use of non-native vegetation and using low or no irrigation landscaping for landscaped retention basins.

- Conduct regular inspections and maintenance of long-term erosion control measures to ensure long-term effectiveness.
- Project sites that may affect intermittent and perennial streams, swales, ephemeral washes, wetland natural communities, other DRECP water land covers, or sites occupied by aquatic Covered Species due to ground water or surface water extraction will conduct hydrologic studies during project planning to determine the potential effect of ground water and surface water extraction on the hydrologic unit. These studies will include both watershed effects as well as effects on the deep aquifer. Projects that are likely to affect ground-water resources in a manner that would result in substantial loss of riparian and wetland natural communities and/or habitat for aquatic Covered Species are prohibited.
- The use of evaporation ponds for water management will be avoided when the water could harm birds or other terrestrial wildlife due to constituents of concern present in the wastewater (e.g., Selenium, hypersalinity, etc.). Evaporation ponds will be configured to minimize attractiveness to shorebirds (e.g., maintain water depths over two feet; maintain steep slopes along edge; enclose evaporation ponds in long-term structures; or obscure evaporation ponds from view using materials that blend in with the natural surroundings).

- Ramps that allow the egress of wildlife from ponds or other water management infrastructure will be installed.

Standard Practices for Soil Resources

AM-PW-10: Implement the following standard practices for soil resources:

- Implement standard industry construction practices to prevent pollutants from leaching into the soil, minimize water and air erosion of soils, and particulate matter from entering suitable habitat for Covered Species.
- Use construction and installation techniques that minimize new site disturbance, soil erosion and deposition, soil compaction, disturbance to topography, and removal of vegetation.

Standard Practices for Weed Management

AM-PW-11: All Covered Activities will implement integrated weed management actions that meet the approval of the appropriate DRECP Coordination Group, will be carried out during all phases of the project, and at a minimum will include the following:

- Thoroughly clean the tires and undercarriage of vehicles entering or reentering the project site to remove potential weeds.

- Store project vehicles on site in designated areas to minimize the need for multiple washings whenever vehicles re-enter the project site.
- Properly maintain vehicle wash and inspection stations to minimize the introduction of invasive weeds or subsidy of invasive weeds.
- Closely monitor the types of materials brought onto the site to avoid the introduction of invasive weeds and non-native species.
- Reestablish native vegetation quickly on disturbed sites.
- Monitor and quickly implement control measures to ensure early detection and eradication of weed invasions to avoid the spread of invasive weeds and non-native species on site and to adjacent off-site areas.
- Use certified weed-free straw, hay bales, or equivalent fabricated materials for installing sediment barriers.
- Train employees and contractors to carry out the integrated weed management plan and on their role in ensuring the effectiveness of implementing this plan.

Standard Practices for Fire Prevention/Protection

AM-PW-12: Implement the following standard practices for fire prevention/protection:

- Implement site-specific fire prevention/protection actions particular to the construction and operation of renewable energy and transmission project that include procedures for reducing fires while minimizing the necessary amount of vegetation clearing, fuel modification, and other construction-related activities. At a minimum these actions will include designating site fire coordinators, providing adequate fire suppression equipment, and establishing emergency response information relevant to the construction site.

Standard Practices for Noise

AM-PW-13: Implement the following standard practices for noise:

- To the maximum extent practicable locate stationary noise sources away from Covered Species and suitable habitat.
- Schedule construction activities outside of sensitive times for Covered Species (i.e., seasonal restrictions).
- Implement engineering controls on stationary equipment, buildings, and work areas including sound-insulation and noise enclosures to reduce the average noise level.

- Use noise controls on standard construction equipment including mufflers to reduce noise.
- Measures to minimize vehicle and construction equipment idling.

Standard Practices for Siting and Design

AM-PW-14: Implement the following standard practices for siting and design:

- To the maximum extent practicable site and design projects to avoid impacts to natural communities, unique plant assemblages, as well as occupied habitat and suitable habitat for Covered Species (see "unavoidable impacts to resources" in Glossary of Terms). This includes siting, installing, and maintaining transmission line towers/poles, access roads, pulling sites, as well as storage and parking areas adjacent to linear facilities.
- Delineate the boundaries of areas to be disturbed using temporary construction fencing and flagging prior to construction and confine disturbances, project vehicles, and equipment to the delineated project areas to protect natural communities and Covered Species.
- Long-term nighttime lighting on project features will be limited to the minimum necessary for project security, safety, and compliance with Federal Aviation Administration requirements and will avoid the use of constant-burn lighting.
- All long-term nighttime lighting will be directed away from riparian and wetland vegetation, occupied habitat, and suitable habitat areas for Covered Species. Long-term nighttime lighting will be directed and shielded downward to avoid interference with the navigation of night-migrating birds and to minimize the attraction of insects as well as insectivorous birds and bats to project infrastructure.
- To the maximum extent practicable restrict construction activity to the use existing roads and utility corridors to minimize the number and length/size of new roads, laydown, and borrow areas.
- To the maximum extent practicable confine vehicular traffic to existing routes of travel to and from the project site, and prohibit, within project boundaries, cross-country vehicle and equipment use outside of approved designated work areas.
- To the maximum extent practicable construction of new roads and/or routes will be avoided within Covered Species suitable habitat within identified linkages for those Covered Species, unless the new road and/or route is beneficial to minimize net impacts to natural or ecological resources of concern. These areas will have a goal of "no net gain" of roads.

- To the maximum extent practicable any new road considered within Covered Species suitable habitat within identified linkages for those Covered Species will not be paved and will not negatively affect the function of identified linkages.
- Use nontoxic road sealants and soil stabilizing agents.

Standard Practices for Controlling Nuisance Animals and Invasive Species

AM-PW-15: Implement the following standard practices for controlling nuisance animals and invasive species:

- Covered Activities will not fumigate, use treated bait, or other means of poisoning nuisance animals including rodenticides in areas where Covered Species are known or suspected to occur.
- Manage the use of widely spread herbicides and do not apply herbicides effective against dicotyledonous plants within 1,000 feet from the edge of a 100-year floodplain, stream and wash channels, and riparian vegetation or to soils less than 25 feet from the edge of drains. Exceptions will be made when targeting the base and roots of invasive riparian species such as tamarisk and *Arundo donax* (giant reed). On BLM-administered land, manage herbicides consistent with national and California BLM policies.
- Do not rinse herbicide or pesticide spray tanks in or near water bodies.
- Minimize herbicide, pesticide, and insecticide treatment in areas that have a high risk for groundwater contamination.

Standard Practices for Caring for Injured Wildlife

AM-PW-16: Implement the following standard practices for caring for injured wildlife:

- If a Covered Species is injured or discovered as injured during construction, construction activity will be stopped in the vicinity of the animal. Immediately notify the Designated Biologist, who will take the injured animal to a pre-approved wildlife care center or veterinary facility. The Designated Biologist will notify USFWS and CDFW about the injured animal by telephone or email within 24 hours. The applicant will bear all costs associated with the care and treatment of injured animals found on the project site during all project phases.

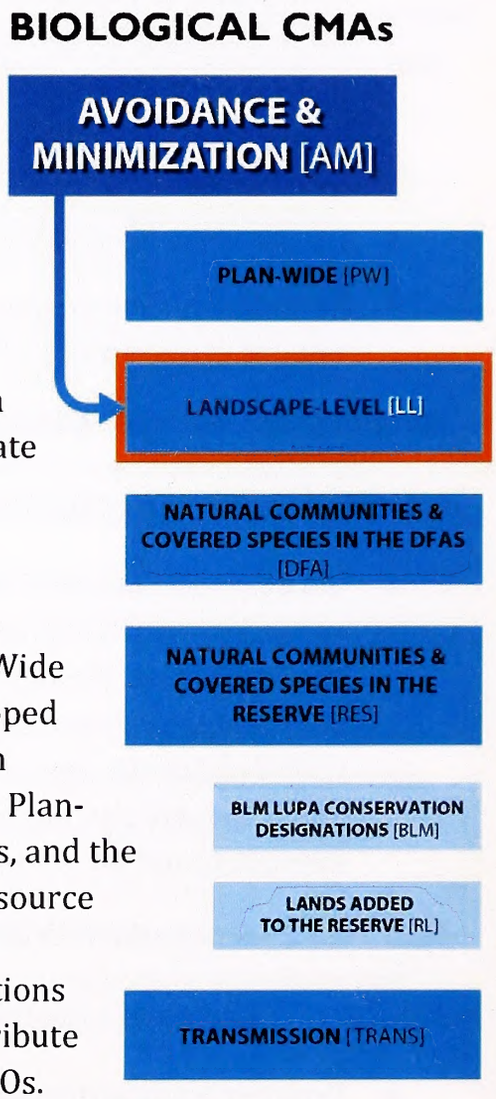
Other General Standard Practices

AM-PW-17: Implement the following other general standard practices:

- Prohibit feeding of wildlife, leaving of food or trash as an attractive nuisance to wildlife, collection of native plants, or harassing of wildlife on the project site.

- Any wildlife encountered during the course of construction will be allowed to leave the construction area unharmed.
- Prohibit domestic pets on the project site. This would not preclude the use of domestic animals (e.g. dogs) that may be used to aid in official and approved monitoring procedures/protocols.
- All construction materials will be visually checked for the presence of wildlife prior to their movement or use.
- All steep-walled trenches or excavations used during the project will be covered, except when being actively used, to prevent entrapment of wildlife. If trenches cannot be covered, exclusion fencing will be installed around the trench or excavation. Open trenches or other excavations will be inspected by a Designated Biologist immediately before backfilling, excavation, or other earthwork.

II.3.1.2.5.3 Landscape-Level Avoidance and Minimization CMAs



At the landscape-level, the Plan-wide BGOs address creating a DRECP-wide, connected, landscape-scale reserve system consisting of large habitat blocks of all constituent natural communities. The reserve system maintains ecological integrity, ecosystem function and biological diversity, maintains natural patterns of genetic diversity, allows adaptation to changing conditions (including activities that are not covered by the Plan), and includes temperature and precipitation gradients, elevation gradients, and a diversity of geological facets to accommodate range contractions and expansions of species adapting to climate change. The mechanisms for contributing to the landscape-level Plan-wide BGOs include:

- **Reserve Design and Assembly –** The DRECP Plan-Wide Reserve Design Envelope for each alternative developed from the reserve design process described in Section I.3.4.4 identifies the areas important for meeting the Plan-wide BGOs for Covered Species, natural communities, and the associated landscape features and processes. The resource protection and management within the BLM LUPA conservation designations and conservation acquisitions within the Conservation Planning Areas would contribute towards achieving the Plan-wide landscape-level BGOs.

Compensation for the impacts of Covered Activities would contribute toward reserve assembly, as described in Section II.3.1.2.5.7 and Appendix H.

- **Implementation of the Plan-wide CMAs –** Many of the Plan-wide CMAs (Section II.3.1.2.5.2) address avoidance and minimization designed to maintain and promote landscape scale processes (e.g., resource setback standards, standard practices for hydrology and water resources, standard practices for soil resources, and standard practices for weed management).
- **Implementation of Landscape-level Biological CMAs –** Landscape-level CMAs have been identified to provide additional avoidance and minimization for specific landscape scale processes, including linkages and connectivity, hydrology, and Aeolian processes.

The following provides the landscape-level biological CMAs.

Linkages and Connectivity

The DRECP Plan-Wide Reserve Design Envelope was developed to capture areas important for habitat linkages and connectivity, and the Plan-wide CMAs were designed to avoid and minimize the effects of Covered Activities on linkages and connectivity. Additionally, the following landscape-level CMAs would be implemented for Covered Activities to avoid and minimize effects to linkages and connectivity, consistent with the linkages depicted in Appendix H. The siting of projects along the edges of these linkages would be configured (1) to maximize the retention of microphyll woodlands and inclusion of other physical and biological features conducive to species' dispersal, and (2) based on available empirical data collected under the MAMP or other sources, including radio telemetry, wildlife tracking sign, and road-kill information.

- **AM-LL-1:** The siting of projects along the edges of the linkages identified in Appendix H (Figures H-1 and H-2) will be configured (1) to maximize the retention of microphyll woodlands and their constituent natural communities and inclusion of other physical and biological features conducive to species' dispersal, and (2) informed by existing available information on modeled Covered Species habitat and element occurrence data, mapped delineations of natural communities, and based on available empirical data collected under the MAMP or other sources, including radio telemetry, wildlife tracking sign, and road-kill information. Additionally, Covered Activities will be sited and designed to maintain the function of Covered

  Species connectivity and their associated habitats in the following linkage and connectivity areas:

  - Within a 5-mile-wide linkage across Interstate 10 centered on Wiley's Well Road to connect the Mule and McCoy mountains.

- Within a 3-mile-wide linkage across Interstate 10 to connect the Chuckwalla and Palen mountains.
- Within a 1.5-mile-wide linkage across Interstate 10 to connect the Chuckwalla Mountains to the Chuckwalla Valley east of Desert Center.
- The confluence of Milpitas Wash and Colorado River floodplain within 2 miles of California State Route 78.

In addition to these specific landscape linkages identified above, the Riparian and Wetland Natural Communities and Covered Species CMAs will contribute to maintaining and promoting habitat connectivity and wildlife movement (see RIPWET under Section II.3.1.2.5.4). The Covered Species CMAs provide additional avoidance and minimization actions for important species-specific habitat linkages (see Section II.3.1.2.5.4).

Hydrology

AM-LL-2: The DRECP Plan-Wide Reserve Design Envelope was developed to capture important hydrologic features, and the Plan-wide CMAs (i.e., the Standard Practices for Hydrology and Water Resources) are designed to avoid and minimize the effects of Covered Activities on hydrologic function. The Plan-wide CMAs will require that the siting and design of Covered Activities maintain the function of natural surface water processes, groundwater processes, hydrogeomorphic processes, and hydrologic regimes. Existing laws and regulations associated with wetlands and water features will also apply to Covered Activities. Additionally, the Riparian and Wetland Natural Communities and Covered Species CMAs will provide additional avoidance and minimization that will contribute to maintaining and promoting hydrologic function (see RIPWET under Section II.3.1.2.5.4).

Aeolian Processes

AM-LL-3: The DRECP Plan-Wide Reserve Design Envelope was developed to capture important sand source, transport, and deposition areas, and the Plan-wide CMAs are designed to avoid and minimize the effects of Covered Activities on Aeolian function. Additionally, the following landscape-level CMAs will be implemented for Covered Activities to avoid and minimize effects to Aeolian processes.

- For Covered Activities that potentially occur within or bordering Aeolian and sand transport corridors, complete studies to verify the accuracy of the DRECP dunes and sand resources mapping as shown in Appendix H and to determine whether the Covered Activities would occur within an Aeolian transport corridor, if the Covered Activities are subject to Aeolian transport corridor requirements, and if the Covered Activities need to be reconfigured to satisfy avoidance requirements. Appendix H

depicts the Aeolian and sand transport areas within the Plan Area; however, the DRECP dunes and sand mapping, DRECP land cover map, DRECP species models, and other data sources considered to be the best available information on Aeolian corridors will be used in this determination.

- Covered Activities and other development in areas that potentially affect the amount of sand entering or transported within Aeolian transport corridors will be designed and operated to maintain the quality and function of Aeolian transport corridors and sand deposition zones (unless related to maintenance of existing facilities), avoid a reduction in sand-bearing sediments within the Aeolian system, and minimize mortality to Covered Species.
- Within Aeolian corridors that transport sand to dune formations and natural communities downwind inside and outside of the DFAs all Covered Activities will be designed and operated to facilitate the flow of sand across development sites, and avoid the trapping or diverting of sand from the Aeolian corridor. Buildings and structures within the site will take into account the direction of sand flow and to the extent feasible build and align structures to allow sand to flow through the site unimpeded. Fence will be designed to allow sand to flow through and not be trapped.
- Any facilities that alter site hydrology (e.g., sediment barrier) will be designed to maintain continued sediment transport and deposition in the Aeolian corridor in a way that maintains the Aeolian sorting and transport to downwind deposition zones. Site designs for maintaining this transport function shall be submitted to the DRECP Coordination Group for approval.

Additionally, the Dune Natural Community and Covered Species CMAs will contribute to maintaining and promoting Aeolian processes (see DUNE under Section II.3.1.2.5.4).

Project-Specific Bird and Bat Operational Actions for Covered Species

AM-LL-4: Proponents of Covered Activities on both federal and nonfederal land that will likely impact bird and bat Covered Species during construction, operation, and maintenance will develop and implement a project-specific bird and bat operational actions for Covered Species. The goal of the project-specific bird and bat operational actions will be to avoid and minimize direct mortality of birds and bats from the construction, operation, and maintenance of the specific wind, solar, geothermal, or transmission project. The project-specific bird and bat operational actions will use applicable state and Wildlife Agency guidelines (such as the USFWS Land-Based Wind Energy Guidelines and the California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development) for operations and address the specific measures for avoidance and minimization, monitoring plans, and reporting requirements for bird and

bat impacts during operations (CEC and CDFG 2007). Bird and bat operational actions will be created on a project-by-project basis by incorporating a variety of available measures that are applicable to the specific project and that together meet the approval of the DRECP Coordination Group for sufficiently avoiding and minimizing, and adaptively monitoring and managing impacts to bird and bat species during operations. Compensation for the impacts of operations on bird and bat Covered Species is addressed under compensation CMAs in Section II.3.1.2.5.7.

The avoidance and minimization measures for impacts to birds and bats during operations will be included in the project-specific bird and bat operational actions for Covered Species. The Plan-wide CMAs (Section II.3.1.2.5.2) include some measures that are typically appropriate for a project-specific bird and bat operational actions including measures that reduce disturbed areas, avoid attracting birds and bats to dangerous project areas, prevent collisions, reduce predator subsidies and perches, as well as limit bird and bat exposure to hazardous materials. The bird and bat operational actions will also address hazards applicable to the specific project including bird and bat collisions with renewable energy infrastructure; inadvertent behavioral changes and mortality due to reflective surfaces that may result in birds mistaking the solar field for a body of water; polarized light pollution; and injury or mortality due to birds and bats coming in contact with the areas above the solar field where elevated levels of solar flux exist. Measures that could be incorporated or appropriately adapted for project-specific bird and bat operational actions include:

- Siting and designing Covered Activities will avoid high bird and bat movement areas that will separate birds and bats from their common nesting and roosting sites, feeding areas, or lakes and rivers.
- During project siting and design, conducting monitoring of bird and bat presence as well as bird and bat use of the project site using the most current survey methods and best procedures available at the time. This pre-project and pre-operations information will serve as the baseline from which to monitor and measure project operations in the future.
- Reusing or co-locate new transmission facilities and other ancillary facilities with existing facilities and disturbed areas to reduce habitat destruction and avoid additional collision risks.
- Avoiding the use of habitat improvements including ponds, guzzlers, rock or brush piles, and bird nest boxes on or near project sites with potential bird and bat hazards.
- Utilizing unguyed monopole towers or tubular towers to reduce Common Raven perches as well as bird and bat collisions.

- Minimizing the use of guywires. Where the use of guywires is unavoidable, demarcating guywires using the best available methods to minimize avian species strikes.
- Evaluation and installation of the best available bird and bat detection and deterrent technologies available at the time of construction. For solar power tower projects, these detection and deterrent systems will be configured to minimize bird species from flying over the site by day, and especially from flying into the project's concentrating radiant flux zone. Passive deterrents may be configured to break up light polarizing surfaces to minimize avian recognition and collision conflicts. For wind projects, a detection and deterrent system will be configured to minimize the potential for bird and bat species flying into the project's rotor swept area.
- Utilizing project designs and project operations that minimize the reflectivity (acoustic and visual/polarizing) and exposure duration of reflective surfaces to avian species (e.g., vertically aligning solar panels during the night and reduced reflectivity resulting from material choices or applications).
- When fencing is necessary, using bird and bat compatible design standards.
- Using lighting that does not attract birds and bats or their prey to project sites including using non-steady burning lights (red, dual red and white strobe, strobe-like flashing lights) to meet Federal Aviation Administration requirements, using motion or heat sensors and switches to reduce the time when lights are illuminated, using appropriate shielding to reduce horizontal or skyward illumination, and avoiding the use of high-intensity lights (e.g., sodium vapor, quartz, and halogen).
- Instituting a vehicle speed limit on the project site to reduce vehicle collision risks with birds and bats.
- Implementing a robust monitoring program to regularly check for wildlife carcasses, document the cause of mortality, and promptly remove the carcasses.
- Installing flight diverters on transmission lines according to the most current Wildlife Agencies guidelines (see **AM-TRANS-2**).
- Incorporating a bird and bat use and mortality monitoring program during operations using current protocols and best procedures available at time of monitoring. This monitoring program will ensure that the information collected during operations is reported to the DRECP Coordination Group in a way that is compatible for use in the MAMP.
- Project-specific operational avoidance and minimization actions that reduce the level of impact on the populations of bird and bat species including:

- Radar detection systems and associated temporary wind turbine shutdown.
- Wind turbine cut-in speed restrictions.

Additional bird and bat operational actions would be required for Covered Activities proposed in the following areas:

- Dry lakes and playas of the north Mojave region, which include China Lake, Koehn Lake, Harper Lake, and Searles Lake (as shown in the Audubon Important Bird Areas on Figure III.7-15)
- Antelope Valley (as shown in the Audubon Important Bird Areas on Figure III.7-15)
- Lower Colorado River Valley (as shown in the Audubon Important Bird Areas on Figure III.7-15)
- The Salton Sea and bordering areas including agricultural land of the Imperial Valley (as shown in the Audubon Important Bird Areas on Figure III.7-15)
- Documented avian movement corridors along the north slope of the San Gabriel and San Bernardino mountain ranges
- Other regionally important seasonal use areas and migratory corridors identified in future studies or otherwise documented in the scientific literature that the DRECP Coordination Group determines applies under this CMA

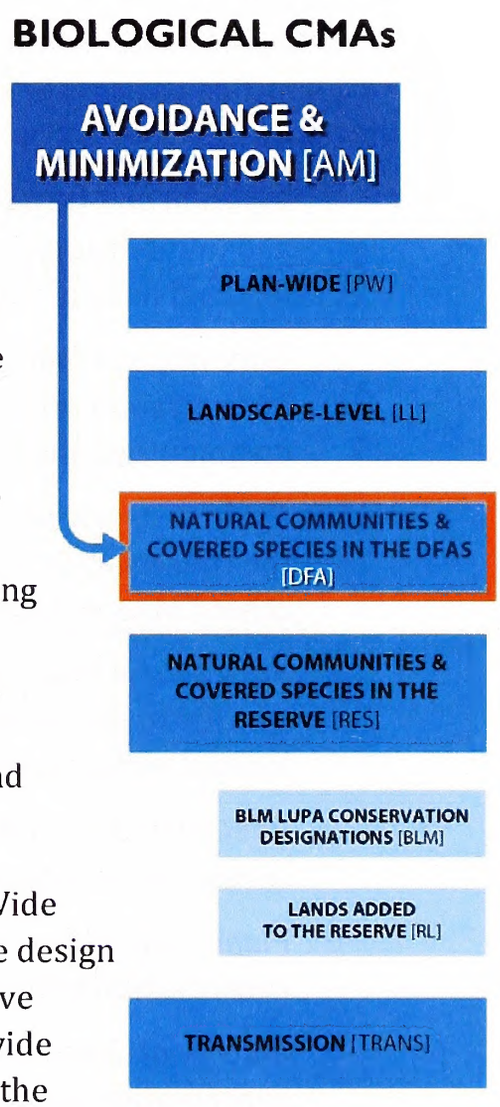
In addition to the bird and bat operation actions listed above, projects proposed in important bird and bat Covered Species areas would be required to develop and implement the following avoidance and minimization actions:

- Projects sited in areas described above would be required to implement best available techniques and technologies that minimize the potential bird and bat mortality during construction and operations, as determined by the DRECP Coordination Group. For example:
    - Use techniques that would minimize attraction of birds to hazardous situations that are mistaken to be or simulate natural habitats (e.g., bodies of water).
    - Implement operational management techniques that minimize impacts to migratory birds during diurnal and seasonal cycles (e.g., positioning of heliostats to decrease surface area exposed to avian species).

The monitoring and adaptive management actions for impacts to birds and bats during operations will be determined by the project-specific bird and bat operational actions. Some measures specific in the MAMP in Section II.3.1.3 may be incorporated into the project-specific bird and bat operational actions as appropriate. The monitoring and reporting aspects of the bird and bat operational actions will be designed to be compatible

with information from any pre-construction or construction surveys and MAMP studies. The bird and bat operational actions will determine the appropriate procedures for monitoring that will provide project-specific information on annual operational effects on birds and bats and that will include triggers that dictate the amount and type of compensation required.

II.3.1.2.5.4 Natural Communities and Covered Species Avoidance and Minimization CMAs in DFAs



At the natural community level, the Plan-wide BGOs are directed toward promoting biodiversity and ecological function within each natural community to benefit covered or native species dependent on, or closely associated with, each natural community. They are also directed toward maintaining well-distributed, inter-connected, and resilient extents of natural communities and their constituent alliances that will persist over time despite the effects of development and climate change. At the Covered Species level, the Plan-wide BGOs are aimed at protecting, managing, and contributing to recovery of viable self-sustaining populations of Covered Species throughout the species' distribution in the Plan Area, including conserving sufficient habitat and resources to adapt to environmental fluctuations and habitat connectivity to facilitate population movement and genetic exchange among populations. The mechanisms for contributing to these natural community and Covered Species Plan-wide BGOs include:

- **Reserve Design and Assembly –** The DRECP Plan-Wide Reserve Design Envelope developed from the reserve design process described in Section I.3.4.4 for each alternative identifies the areas important for meeting the Plan-wide BGOs for Covered Species, natural communities, and the associated landscape features and processes. The resource protection and management within the BLM LUPA conservation designations and conservation acquisitions within the Conservation Planning Areas would contribute towards achieving the Plan-wide BGOs for natural communities and Covered Species. Compensation for the impacts of Covered Activities would contribute towards reserve assembly, as described in Section II.3.1.2.5.7.
- **Implementation of the Plan-Wide CMAs –** Many of the Plan-wide CMAs (Section II.3.1.2.5.2) address avoidance and minimization designed to protect and maintain

natural communities and Covered Species (e.g., resource setback standards, standard practices for hydrology and water resources, standard practices for soil resources, and standard practices for weed management).

- **Implementation of Landscape-level Biological CMAs** – Landscape-level CMAs (Section II.3.1.2.5.3) have been identified to provide additional avoidance and minimization for specific landscape scale processes, that are also designed to protect and maintain certain natural communities and Covered Species.
- **Implementation of the natural community and Covered Species Biological CMAs** – Natural community and Covered Species biological CMAs have been identified to provide specific, additional avoidance and minimization, including CMAs for:
  - *Riparian and Wetland Natural Communities and Covered Species CMAs:* Avoidance and minimization actions specific to the conservation strategy for riparian and wetland natural communities and Covered Species located within the DFAs.
  - *Dune natural communities and Covered Species CMAs:* Avoidance and minimization actions specific to the conservation strategy for dune natural communities and Covered Species located within the DFAs.
  - *Other natural communities CMAs:* Avoidance and minimization actions specific to the conservation strategy for other natural communities not nested within the other CMAs and located within the DFAs.
  - *Agricultural lands Covered Species CMAs:* Avoidance and minimization actions specific to the conservation strategy for agricultural lands Covered Species located within the DFAs.
  - *Bat Covered Species CMAs:* Avoidance and minimization actions specific to the conservation strategy for bat Covered Species located within the DFAs.
  - *Plant Covered Species:* Avoidance and minimization actions specific to the conservation strategy for plant Covered Species located within the DFAs.
  - *Individual Covered Species:* Avoidance and minimization actions specific to the conservation strategy for other individual Covered Species not nested within the other CMAs and located in the DFAs.

The following provides the natural community and Covered Species biological CMAs in DFAs.

Riparian and Wetland Natural Communities and Covered Species (RIPWET)

In addition to the Plan-wide CMAs and applicable landscape-level CMAs, the following CMAs would be implemented within the DFAs for the Riparian and Wetland Natural

Communities and Covered Species listed below. These natural communities and Covered Species are grouped based on their general associations that allow for the consolidation of some CMAs, due to the overlap and co-benefits of some avoidance and minimization CMAs to an entire group of natural communities and/or Covered Species. Other natural communities and/or Covered Species that could have associations or co-benefits with the Riparian and Wetland Natural Communities and Covered Species CMAs may be listed in other CMAs groupings.

Riparian Natural Communities

- Madrean Warm Semi-Desert Wash Woodland/Scrub
- Mojavean Semi-Desert Wash Scrub
- Sonoran-Coloradan Semi-Desert Wash Woodland/Scrub
- Southwestern North American Riparian Evergreen and Deciduous Woodland
- Southwestern North American Riparian/Wash Scrub

Wetland Natural Communities

- Arid west freshwater emergent marsh
- Californian Warm Temperate Marsh/Seep
- North American Warm Desert Alkaline Scrub and Herb Playa and Wet Flat
- Southwestern North American Salt Basin and High Marsh

Riparian and Wetland Bird Covered Species

- Willow Flycatcher
- Southwestern Willow Flycatcher
- Least Bell's Vireo
- Western Yellow-billed Cuckoo
- Yuma Clapper Rail
- California Black Rail
- Tricolored Blackbird

Fish Covered Species[1]

- Mohave Tui Chub
- Owens Tui Chub
- Owens Pupfish

Other Riparian and Wetland Covered Species

- Tehachapi Slender Salamander

Common to Riparian and Wetland Natural Community CMAs

AM-DFA-RIPWET-1: The riparian and wetland natural communities and other features listed in Table II.3-6 will be avoided to the maximum extent practicable (see "unavoidable impacts to resources" in the Glossary of Terms) with the specified setback in DFAs.

Table II.3-6
Riparian and Wetland Avoidance and Setbacks

Riparian and Wetland Natural Communities or Features	DFAs Setback[1]
Riparian Natural Communities[1]	
Madrean Warm Semi-Desert Wash Woodland/Scrub	200 feet
Mojavean Semi-Desert Wash Scrub	200 feet
Sonoran-Coloradan Semi-Desert Wash Woodland/Scrub	200 feet
Southwestern North American Riparian Evergreen and Deciduous Woodland	0.25 mile
Southwestern North American Riparian/Wash Scrub	0.25 mile
Wetland Natural Communities[1]	
Arid west freshwater emergent marsh	0.25 mile
Californian Warm Temperate Marsh/Seep	0.25 mile
Other Riparian and Wetland Related Features	
Managed Wetlands[2]	0.25 mile
Mojave River[3]	0.25 mile
Agricultural Drains[4]	25 feet
Undifferentiated Riparian land cover[5]	200 feet

1 Setbacks are measured from the edge of the mapped riparian or wetland vegetation or water feature per AM-PW-3.
2 Setback is from managed wetlands including USFWS Refuges, state managed wetlands, and duck clubs in Imperial Valley. See specifications for the Salton Sea below.

1 Desert pupfish is also a fish Covered Species, but this species is addressed Agricultural Lands Covered Species CMAs

[3] Setback is measured from the edge of mapped riparian or edge of FEMA 100-year floodplain of the Mojave River, whichever is further from the center line of the Mojave River channel.

[4] Setback for agricultural drains is measured from the edge of the drain or the Palos Verdes Irrigation District and Imperial Irrigation District ROW.

[5] Undifferentiated "Riparian" land cover includes portions of major river courses (Mojave River and Colorado River) within the main channels where riparian natural communities were not mapped.

- For unavoidable impacts (see "unavoidable impacts to resources" in the Glossary of Terms) to the riparian natural communities, wetland natural communities, or encroachments on the setbacks listed in Table II.3-6, the following will be required:
  - Written concurrence from the DRECP Coordination Group will be required prior to commencing the unavoidable impacts. Approval from the DRECP Coordination Group will consider previously permitted impacts and conservation for these natural communities, siting and design considerations, and proposed compensation for the unavoidable impacts.
  - Compliance with all applicable laws and regulations pertaining to wetlands and waters would be required prior to commencing the unavoidable impacts.
  - Hydrologic function of the avoided riparian or wetland natural communities will be maintained.
- Unavoidable impacts to the riparian and wetland natural communities or other features including the setbacks listed in Table II.3-6 will occur outside of the avian nesting season, which is from February 1 through August 31.
- The DRECP, and specifically the riparian and wetland natural communities setback for managed wetlands, is intended to be complimentary to the Salton Sea restoration planning effort. The Salton Sea DFA is limited to geothermal projects and surface occupancy from Salton Sea shoreline (average sea level in 2013 at -233 feet below sea level) is the only impact allowed under DRECP. As the Salton Sea recedes, surface occupancy for any technology would need to be analyzed and the Plan would need to be amended if coverage is sought under DRECP.

AM-DFA-RIPWET-2: For North American Warm Desert Alkaline Scrub and Herb Playa and Wet Flat, Southwestern North American Salt Basin and High Marsh, and other undifferentiated wetland-related land covers (i.e., "Playa," "Wetland," and "Open Water"), the following will be required:

- Compliance with all applicable laws and regulations pertaining to wetlands and waters will be required prior to commencing the impacts.
- Hydrologic function of the avoided riparian or wetland natural communities will be maintained.

Riparian and Wetland Bird Covered Species

In addition to the Plan-wide CMAs, landscape-level CMAs, and the Riparian and Wetland Natural Communities CMAs, the following CMAs would be implemented within the DFAs for the bird Covered Species listed below:

- Willow Flycatcher
- Southwestern Willow Flycatcher
- Least Bell's Vireo
- Western Yellow-billed Cuckoo
- Yuma Clapper Rail
- California Black Rail
- Tricolored Blackbird

Common Riparian and Wetland Bird CMAs

Siting, Design, Pre-Construction, Construction, and Decommissioning

- **AM-DFA-RIPWET-3:** For pre-construction, construction, and decommissioning Covered Activities within 0.25 mile of any riparian or wetland natural communities, conduct a pre-construction nesting bird survey for riparian and wetland bird Covered Species according to DRECP-approved protocols.
- Based on the results of the pre-construction nesting bird survey for Covered Activities within 0.25 mile of any riparian or wetland natural communities, setback pre-construction, construction and decommissioning Covered Activities 0.25 mile from active nests of riparian and wetland bird Covered Species during the breeding season (February 1 through August 31).

Operations

- **AM-DFA-RIPWET-4:** Nighttime lighting associated with Covered Activities that are located within 1 mile of riparian or wetland vegetation will strictly comply with DRECP standard practices for siting and design including the proper shielding of lights, as described in Section II.3.1.2.5.2.

Tricolored Blackbird

- **AM-DFA-RIPWET-5:** Setback pre-construction, construction, and decommissioning Covered Activities 0.25 mile from occupied habitat during the breeding season (March 1 through September 1).

Fish Covered Species

In addition to the Plan-wide CMAs, landscape-level CMAs, and the Common to Riparian and Wetland Natural Communities CMAs, the following CMAs would be implemented within the DFAs for the fish Covered Species listed below:

- Mohave Tui Chub
- Owens Tui Chub
- Owens Pupfish

Common Riparian and Wetland Fish Covered Species CMAs

- **AM-DFA-RIPWET-6:** Setback pre-construction, construction, and decommissioning Covered Activities 0.25 mile from the edge of existing or newly discovered occurrences.
- Demonstrate neutral or beneficial long-term hydrologic effects on nearby riparian and wetland habitat as well as fish Covered Species prior to commencing unavoidable pre-construction, construction, and decommissioning Covered Activities.
- **AM-DFA-RIPWET-7:** Site and design Covered Activities to fully avoid operational impacts to existing and newly discovered occurrences, including measures from the applicable recovery plan.

Other Riparian and Wetland Covered Species

In addition to the Plan-wide CMAs, landscape-level CMAs, and the Riparian and Wetland Natural Communities CMAs, the following CMAs would be implemented within the DFAs and for the Other Riparian and Wetland Covered Species listed below:

- Tehachapi Slender Salamander

Tehachapi Slender Salamander

- **AM-DFA-RIPWET-8:** Avoid pre-construction, construction, and decommissioning Covered Activities within 0.25 mile of existing or newly discovered occurrences or suitable habitat.
- **AM-DFA-RIPWET-9:** Construct culverts or other suitable below-grade crossings for new or improved roadways that bisect suitable habitat.
- Construct barriers to reduce at-grade crossings along new or improved roadways that bisect suitable habitat.

Dune Natural Communities and Covered Species (DUNE)

In addition to the Plan-wide CMAs and applicable landscape-level CMAs, the following CMAs would be implemented within the DFAs for the Dune Natural Communities and Covered Species listed below. These natural communities and Covered Species are grouped based on their general associations that allow for the consolidation of some CMAs, due to the overlap and co-benefits of some avoidance and minimization CMAs to an entire group of natural communities and/or Covered Species. Other natural communities and/or Covered Species that could have associations or co-benefits with the Dune Natural Communities and Covered Species CMAs may be listed in other CMAs groupings.

Dune Natural Communities

- North American Warm Desert Dune and Sand Flats

Dune Covered Species

- Mojave Fringe-toed Lizard

Dune Natural Communities

North American Warm Desert Dune and Sand Flats

- **AM-DFA-DUNE-1:** Covered Activities, including transmission substations, will be sited to avoid the dune natural community (i.e., North American Warm Desert Dune and Sand Flats). Unavoidable impacts (see "unavoidable impacts to resources" in the Glossary of Terms) to the dune natural community will be limited to transmission projects, except transmission substations, and access roads that will be sited to minimize unavoidable impacts.
- For unavoidable impacts (see "unavoidable impacts to resources" in the Glossary of Terms) to the dune natural community the following will be required:
- Written concurrence from the DRECP Coordination Group will be required prior to commencing the unavoidable impacts. Approval from the DRECP Coordination Group will consider previously permitted impacts and conservation for these natural communities, siting and design considerations, and proposed compensation for the unavoidable impacts.
- Access roads will be unpaved.
- Access roads will be designed and constructed to be at grade with the ground surface to avoid inhibiting sand transportation.

Dune Covered Species

Mojave Fringe-Toed Lizard

- **AM-DFA-DUNE-2:** Dune formations and other sand accumulations with suitable habitat characteristics (i.e., unconsolidated blow-sand) will be mapped.
- For unavoidable impacts (see "unavoidable impacts to resources" in the Glossary of Terms) into sand transport areas the project will be sited in the mapped zone with the least impacts to sand transport and Mojave fringe-toed lizards.
- **AM-DFA-DUNE-3:** If suitable habitat characteristics are identified during the habitat assessment, clearance surveys for Mojave fringe-toed lizard will be performed in suitable habitat areas.

Other Natural Communities (ONC)

Other natural communities include the forest, woodland, chaparral and coastal scrub communities of the foothill and mountain areas and the desert scrub, woodland, badland, and grassland communities that characterize a majority of the Plan Area and are listed below. These natural communities are grouped based on their general associations that allow for the consolidation of some CMAs, due to the overlap and co-benefits of some avoidance and minimization CMAs to an entire group of natural communities. Other natural communities that could have associations or co-benefits with the Other Natural communities CMAs may be listed in other CMAs groupings.

California Forest and Woodland Natural Communities

- Californian Broadleaf Forest and Woodland
- Californian Montane Conifer Forest

Chaparral and Coastal Scrub Natural Communities

- Californian Mesic Chaparral
- Californian Pre-Montane Chaparral
- Californian Xeric Chaparral
- Central and South Coastal California Seral Scrub
- Central and South Coastal Californian Coastal Sage Scrub
- Western Mojave and Western Sonoran Desert Borderland Chaparral

Desert Conifer Woodland Natural Community

- Great Basin Pinyon-Juniper Woodland

Desert Outcrop and Badland Natural Community

- North American Warm Desert Bedrock Cliff and Outcrop

Desert Scrub Natural Communities

- Arizonan upland Sonoran Desert scrub – Sonoran Desert scrub
- Intermontane Deep or Well-Drained Soil Scrub – Sonoran Desert Scrub
- Intermontane Seral Shrubland
- Inter-Mountain Dry Shrubland and Grassland
- Intermountain Mountain Big Sagebrush Shrubland and steppe
- Lower bajada and Fan Mojavean – Sonoran Desert Scrub
- Mojave and Great Basin Upper Bajada and Toeslope
- Shadscale – Saltbush Cool Semi-Desert Scrub
- Southern Great Basin Semi-Desert Grassland

Grassland Natural Communities

- California Annual and Perennial Grassland
- California Annual Forb/Grass Vegetation

The natural communities that are present within the Plan Area would be partially located and conserved in the reserve. Additionally, each of these natural communities would be protected and managed within the LLPAs and BLM LUPA conservation designations (NLCS, ACEC, Wildlife Allocations) through implementation of the CMAs as well as the values, goals, objectives, and management actions established in the BLM special land allocation management plans. The reserve design and assembly would occur through compensation for the impacts of Covered Activities such as renewable energy and transmission development that would provide an additional conservation for these natural communities in a configuration that contributes to the reserve and achievement of the BGOs.

The Plan-wide CMAs and applicable landscape-level CMAs would be implemented for Covered Activities, which would contribute to avoidance and minimization of impacts to these natural communities. Additionally, implementation of the species-specific CMAs (i.e., bat Covered Species CMAs, plant Covered Species CMAs, and individual Covered Species

CMAs) would benefit the natural communities that support these species. Compensation for impacts to these natural communities would be implemented according to the specifications in Section II.3.1.2.5.7. Furthermore, the following Other Natural Community CMAs would be implemented within the Minimum Requirement DFAs and Moderate Requirement DFAs to provide additional avoidance and minimization from the effects of Covered Activities.

Common Other Natural Communities CMAs

The following CMAs would be implemented to avoid and minimize the impacts of Covered Activities on other natural communities:

- **AM-DFA-ONC-1:** During habitat assessments conducted for all Covered Activities in these natural communities (see Section II.3.1.2.5.2) or as part of plant species survey (see PLANT in Section II.3.1.2.5.4), follow BLM/CDFW guidelines for mapping/surveying cactus, yuccas, and succulents, including barrel cactus (*Ferocactus cylindraceus*), Joshua tree (*Yucca brevifolia*), other BLM Special Status Plants, and other species subject to California Desert Native Plants Act (i.e., California Food and Agricultural Code 80001 et. seq.). Inventory the number or density of the California desert native plant species listed above that would be subject to ground disturbance impacts.
- **AM-DFA-ONC-2:** Develop and implement a set of preservation and/or salvage and transplant actions for the California desert native plant species listed above in **AM-DFA-ONC-1** that will be impacted by ground disturbance activities from Covered Activities. This set of actions will be reviewed and approved by the DRECP Coordination Group.

No additional avoidance and minimization CMAs would be required for Covered Activities specific to the California forest and woodland, chaparral and coastal scrub, desert conifer woodland, desert outcrop and badland, desert scrub, and grasslands natural communities.

Agricultural Lands Covered Species (AG)

In addition to the Plan-wide CMAs and applicable landscape-level CMAs, the following CMAs would be implemented within the DFAs for the following Covered Species that use or are associated with agricultural lands in the Plan Area and are listed below. These Covered Species are grouped based on their general associations that allow for the consolidation of some CMAs, due to the overlap and co-benefits of some avoidance and minimization CMAs to an entire group of Covered Species. Other natural communities and/or Covered Species that could have associations or co-benefits with the Agricultural Lands Covered Species CMAs may be listed in other CMAs groupings.

- Desert Pupfish

- Burrowing Owl
- Mountain Plover
- Greater Sandhill Crane
- Swainson's Hawk

The conservation strategy for Agricultural Lands Covered Species is described in Appendix H. The conservation strategy will contribute to the short and long-term conservation of Covered Species that depend on agricultural lands through the application of avoidance and minimization measures, compensation for impacts to agricultural habitat, employing management actions to enhance habitat value, as well as landscape scale conservation through protection and management.

Application of the following CMAs will protect and benefit these agricultural lands Covered Species. In addition to these CMAs, the avoidance and setback provisions for managed wetlands, the Mojave River, and agricultural drains (see RIPWET in Section II.3.1.2.5.4) would conserve wetland and riparian features within the agricultural matrix and provide conservation benefits to the Covered Species generally associated with agricultural lands. Impacts to agricultural lands will comply with the required compensation for loss of agricultural habitat with a focus on the Imperial Valley, Palo Verde Valley, and West Mojave in particular. Furthermore, Covered Activities will adhere to the applicable conditions of the Agricultural Species Adaptive Management Plan (Section II.3.1.3) that would provide adaptive conservation and management for Covered Species associated with agricultural lands.

Common Agricultural Lands Species CMAs

- **AM-DFA-AG-1:** For the agricultural lands associated Covered Species, the following survey requirements will be implemented in the DFAs as shown in Table II.3-7.

Table II.3-7
Agriculture Covered Species Survey Requirements

Species	DFA Survey Requirements
Desert Pupfish	None (wetland, riparian, and irrigation drain buffers described in riparian and wetland CMAs above).
Burrowing Owl	Breeding season surveys (February 1 through August 31) per Burrowing Owl Guidelines (CDFG 2012). Clearance surveys (for direct take avoidance) no less than 14 days prior to ground disturbance per Burrowing Owl Guidelines.
Mountain Plover	None.

Table II.3-7
Agriculture Covered Species Survey Requirements

Species	DFA Survey Requirements
Greater Sandhill Crane	None.
Swainson's Hawk[1]	Protocol surveys in the Antelope and Owens Valleys.

[1] Surveys throughout the Plan Area will be conducted in accordance with the standards in the 2010 (or newer if updated) CEC and CDFW "Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California."

- **AM-DFA-AG-2:** For the agricultural lands associated Covered Species, Covered Activities will be required to implement the setbacks shown in Table II.3-8 in the DFAs.

Table II.3-8
Agriculture Covered Species Setbacks

Species	Applicable To	DFA Setbacks
Desert Pupfish	None	None.[1]
Burrowing Owl	Solar, Wind, and Geothermal Projects	200 meters from active nesting sites.
Mountain Plover	None	None.
Greater Sandhill Crane	None	None.
Swainson's Hawk	Solar, Wind, and Geothermal Projects	0.5 mile from active nests.[2]
	Other Covered Activities[3]	0.5 mile from active nest during breeding season (February 1 through September 30).

[1] There are no species-specific setbacks for desert pupfish due to the existing setbacks from agricultural drains and wetlands described in the CMA AM-DFA-RIPWET-1.

[2] Some existing Swainson's hawk active nests and their associated setback area are shown in Appendix H.

[3] Other Covered Activities, besides solar, geothermal, and wind projects (such as road construction and road maintenance) can occur within 0.5 mile of an active nest during the non-breeding season or after an active nest is no longer in use for that season. A nest will be considered active if it was used one or more times within the last five years. Determination of the status of a Swainson's hawk nests will happen in collaboration with the appropriate DRECP Coordination Group.

Individual Agricultural Lands Species CMAs

Burrowing Owl

- **AM-DFA-AG-3:** A Designated Biologist (see Glossary of Terms) will conduct biological monitoring (see Glossary of Terms) to ensure avoidance of occupied burrows and establishment of the 200 meter setback to sufficiently minimize disturbance during the nesting period on all project sites.

- **AM-DFA-AG-4:** If burrows cannot be avoided on-site, passive burrow exclusion by a Designated Biologist (see Glossary of Terms) through the use of one-way doors will occur according to the specifications in Appendix H. Before exclusion, there must be verification that burrows are empty as specified in Appendix H. Confirmation that the burrow is not currently supporting nesting or fledgling activities is required prior to any burrow exclusions or excavations.
- **AM-DFA-AG-5:** Project-specific active translocation will be considered by the DRECP Coordination Group consistent with the MAMP (Section II.3.1.3). If there is not suitable habitat adjacent to the site, burrowing owls will be translocated to an appropriate habitat if consistent with the MAMP. Any active translocation of burrowing owls must be approved by the DRECP Coordination Group.

Greater Sandhill Crane

- **AM-DFA-AG-6:** Avoid impacts to all greater sandhill crane roosting sites and site Covered Activities away from roosting sites to the maximum extent practicable (see "unavoidable impacts to resources" in the Glossary of Terms).

Swainson's Hawk

- **AM-DFA-AG-7:** Avoid use of rodenticides and insecticides within five miles of active Swainson's hawk nests.

Bat Covered Species (BAT)

In addition to the Plan-wide CMAs, applicable landscape-level CMAs, and the natural community CMAs, the following CMAs would be implemented within the DFAs for bat Covered Species listed below. These Covered Species are grouped based on their general associations that allow for the consolidation of some CMAs, due to the overlap and co-benefits of some avoidance and minimization CMAs to an entire group of Covered Species. Other natural communities and/or Covered Species that could have associations or co-benefits with the Bat Covered Species CMAs may be listed in other CMAs groupings.

- California Leaf-nosed Bat
- Pallid Bat
- Townsend's Big-eared Bat

Common to Bat Covered Species CMAs

- **AM-DFA-BAT-1:** Covered Activities, except wind projects, will not be sited within 500 feet of any occupied maternity roost or presumed occupied maternity roost as described below.
- Wind Projects will not be sited within 0.5 mile of any occupied or presumed occupied maternity roost.
- Mines will be assumed to be occupied bat roosts, unless appropriate surveys for bat use have been conducted during all seasons (including maternity, lekking or swarming, and winter use). Mines not considered potential bat roosts are only those that have no structure/workings (adits or shafts or crevices out of view).

Plant Covered Species (PLANT)

In addition to the Plan-wide CMAs, applicable landscape-level CMAs, and the natural community CMAs, the following CMAs would be implemented within the DFAs for all plant Covered Species. These Covered Species are grouped based on their general associations that allow for the consolidation of some CMAs, due to the overlap and co-benefits of some avoidance and minimization CMAs to an entire group of Covered Species. Other natural communities and/or Covered Species that could have associations or co-benefits with the Plant Covered Species CMAs may be listed in other CMAs groupings.

- Alkali mariposa-lily
- Bakersfield cactus
- Barstow woolly sunflower
- Desert cymopterus
- Little San Bernardino Mountains linanthus
- Mojave monkeyflower
- Mojave tarplant
- Owens Valley checkerbloom
- Parish's daisy
- Triple-ribbed milk-vetch

Common to Plant Covered Species CMAs

- **AM-DFA-PLANT-1:** Conduct properly timed protocol surveys in accordance with the survey protocols listed in Appendix H, the Special Status Plant Management

Manual Handbook for BLM administered lands, or other appropriate survey protocol approved by the DRECP Coordination Group.

- **AM-DFA-PLANT-2:** Implement an avoidance setback of 0.25 mile for all plant Covered Species occurrences. Setbacks will be placed strategically adjacent to occurrences to protect ecological processes necessary to support the plant Covered Species (see Appendix Q, Baseline Biology Report).
- **AM-DFA-PLANT-3:** Impact to suitable habitat (see Glossary of Terms) for the following plant Covered Species within the Plan Area will be capped (see "DRECP disturbance cap" in the Glossary of Terms) in the DFAs as described below in Table II.3-9.

Table II.3-9
Plant Covered Species Suitable Habitat Disturbance Caps

Plant Covered Species	DFA Disturbance Cap
Triple-ribbed milk-vetch	0%
Bakersfield cactus	0% (occupied habitat cap only)
Alkali mariposa-lily	10%
Barstow woolly sunflower, desert cymopterus, Little San Bernardino Mountains linanthus, Mojave monkeyflower, Mojave tarplant, Owens Valley checkerbloom, Parish's daisy	No disturbance cap

Individual Covered Species (ICS)

In addition to the Plan-wide CMAs, applicable landscape-level CMAs, and natural community CMAs, the following CMAs would be implemented within the DFAs for the following Individual Covered Species listed below. These Covered Species are grouped based on their general associations that allow for the consolidation of some CMAs, due to the overlap and co-benefits of some avoidance and minimization CMAs to an entire group of Covered Species. Other natural communities and/or Covered Species that could have associations or co-benefits with the Individual Covered Species CMAs may be listed in other CMAs groupings.

Reptile Covered Species

- Desert Tortoise
- Flat-tailed horned lizard

Bird Covered Species

- Bendire's Thrasher

- California Condor
- Gila Woodpecker
- Golden Eagle

Mammal Covered Species

- Desert Bighorn Sheep
- Mohave Ground Squirrel

Common Individual Covered Species CMAs

- **AM-DFA-ICS-1:** Conduct the following surveys as applicable in the DFAs as shown in Table II.3-10.

Table II.3-10
Individual Species Survey Requirements

Species	DFA Survey Requirements
Reptile	
Desert tortoise[1]	Protocol surveys in the desert tortoise habitat areas indicated in Appendix H.
Flat-tailed horned lizard[1]	Protocol surveys as specified in the Rangewide Management Strategy (RMS).
Bird	
Bendire's thrasher	Pre-construction nesting bird survey during breeding season (March 1 through September 30) in suitable habitat on and within 500 feet of construction zone.
California condor	None.
Gila woodpecker	None.
Golden eagle	Pre-project golden eagle surveys in **AM-DFA-ICS-28** and pre-construction risk assessment surveys in **AM-DFA-ICS-29**, if applicable as described in golden eagle CMAs below.
Mammal	
Desert bighorn sheep	None.
Mohave ground squirrel[1]	Clearance surveys in the Mohave ground squirrel habitat areas indicated in Appendix H. Protocol surveys in population centers and linkages.

[1] See Appendix H for appropriate survey procedures and protocols.

- **AM-DFA-ICS-2:** Implement the following setbacks shown below in Table II.3-11 as applicable in the DFAs.

Table II.3-11
Individual Species Setback Requirements

Species	DFA Setbacks
Reptile	
Desert tortoise	None.
Flat-tailed horned lizard	None.
Bird	
Bendire's thrasher	Setback pre-construction, construction, and decommissioning Covered Activities 500 feet from active nests.
California condor	Setback solar and geothermal projects 1.5 miles from nest sites and out of direct line of site from nest sites. Setback wind and transmission projects 5 miles from nest sites.
Gila woodpecker	Setback pre-construction, construction, and decommissioning Covered Activities 0.25 mile from suitable habitat during the breeding season (April 1 through July 31).
Golden eagle	Setback Covered Activities 1 mile from active or alternative nests within an active territory as described in **AM-DFA-ICS-26**.
Mammal	
Desert bighorn sheep	None.
Mohave ground squirrel	None.

Reptile Covered Species

Desert Tortoise

Siting, Design, Pre-Construction, Construction, and Decommissioning

1. Protocol Surveys and Translocation

   - **AM-DFA-ICS-3:** Protocol surveys, as described in **AM-DFA-ICS-1** and shown in Table II.3-10, would be required for Covered Activities in the desert tortoise survey areas (see Appendix H). The intent of the protocol surveys in the desert tortoise survey areas is to inform the appropriate siting and design of Covered Activities as well as to plan for the translocation of all desert tortoises in potential impact areas on project sites in these areas. Based on the results of the protocol surveys either USFWS will translocate the identified desert tortoises, the project applicant will translocate the identified desert tortoises, or the Covered Activities will be redesigned/relocated as described below:
   - If protocol surveys identify 14 or fewer desert tortoises in potential impact areas on a project site, the USFWS and CDFW will be contacted and provided with the

protocol survey results and information necessary for the translocation of identified desert tortoises. Pre-construction and construction Covered Activities will not begin until the permittee has completed clearance surveys for the project site and the USFWS has translocated the desert tortoises.

- If protocol surveys identify 15 or more desert tortoises in potential impact areas on a project site, the project applicant will be responsible for the appropriate translocation of all identified desert tortoises in coordination with the USFWS and CDFW per the protocols in the Desert Tortoise Field Manual (USFWS 2009) and the most up-to-date USFWS protocol prior to beginning pre-construction and construction Covered Activities. All desert tortoise blood sample collection and health assessments required for translocation planning or other purposes will be performed according to approved USFWS protocols and CDFW guidance.
- If protocol surveys identify an adult desert tortoise density (i.e., individuals 160mm or more) of more than 5 per square mile or more than 35 individuals total on a project site, the project will be required to be redesigned, resited, or relocated to avoid and minimize the impacts of the project on desert tortoise.

2. Siting and Design

- **AM-DFA-ICS-4:** Any area that has been or will be identified as a Tortoise Translocation Area, as part of the DRECP, project requirement, fulfillment of an ESA Section 7 Biological Opinion or Section 10 permit, will be identified as a development avoidance area. No development that requires translocation of tortoises, will be authorized within these areas and they will be managed for the conservation of desert tortoise.
- **AM-DFA-ICS-5:** Covered Activities, except for transmission projects in existing transmission corridors, will avoid the desert tortoise conservation areas (TCAs) and the desert tortoise linkages identified in Appendix H, except the portion of the TCA in the northern Fremont Valley converted to intensive agriculture prior to 2013.
- **AM-DFA-ICS-6:** Covered Activities within desert tortoise linkages identified in Appendix H, will require an evaluation of the effects on the maintenance of long-term viable desert tortoise populations within the affected linkage. The analysis will consider the amount of suitable habitat required to ensure long-term viability within each linkage given the linkage's population density, long-term demographic and genetic needs, degree of existing habitat disturbance, mortality sources, and most up-to-date population viability modeling. Covered Activities that would compromise the viability of a linkage population or the function of the linkage, as determined by the DRECP Coordination Group, are prohibited and would require reconfiguration or resiting.

- **AM-DFA-ICS-7:** Covered Activities will be sited in lower quality desert tortoise habitat in desert tortoise linkages and the Ord-Rodman TCA, identified in Appendix H.
- **AM-DFA-ICS-8:** Construction of new roads and/or routes will be avoided to the maximum extent practicable (see "unavoidable impacts to resources" in the Glossary of Terms) within desert tortoise habitat in tortoise conservation acres or identified tortoise linkages identified in Appendix H, unless the new road and/or route is beneficial to minimize net impacts to natural or ecological resources of concern for desert tortoise. TCAs and identified linkages should have the goal of "no net gain" of road density.
- Any new road considered within a TCA or identified linkage will not be paved and will not negatively affect the function of identified linkages or negatively affect maintaining local desert tortoise populations.
- Roads requiring the installation of long-term desert tortoise exclusion fencing for construction or operation will incorporate wildlife underpasses (e.g., culverts) to reduce population fragmentation.
- **AM-DFA-ICS-9:** All culverts for access roads or other barriers will be designed to allow safe passage of both juvenile and adult desert tortoises. Desert tortoise exclusion fencing may be utilized to direct tortoise use of culverts and other passages.

3. Exclusion Fencing and Clearance Surveys

- **AM-DFA-ICS-10:** Prior to construction of long-term Covered Activities that are likely to adversely affect desert tortoises in areas where protocol and clearance surveys are required, long-term desert tortoise exclusion fencing will be installed around the perimeter of the project footprint (see Glossary of Terms) in accordance with the Desert Tortoise Field Manual (USFWS 2009) or most up-to-date USFWS protocol. Additionally, short-term desert tortoise exclusion fencing will be installed around short-term construction areas (e.g., staging areas, storage yards, excavations, and linear facilities) per the Desert Tortoise Field Manual (USFWS 2009) or most up-to-date USFWS protocol.
- Covered Activities will construct desert tortoise exclusion fences between November 1 and March 14 to minimize impacts to tortoises and to accommodate subsequent desert tortoise surveys. Exemption or modification of desert tortoise exclusion fencing requirements may be obtained from the DRECP Coordination Group on a case-by-case basis. The DRECP Coordination Group may require substitute measures, such as on-site biological monitors in the place of the fencing requirement.

- Within 24 hours prior to desert tortoise exclusion fence construction, a Designated Biologist (see Glossary of Terms) will conduct a clearance survey of the fence alignment to clear desert tortoises from the proposed fence line's path.
- All desert tortoise exclusion fencing will incorporate desert tortoise proof gates or other approved barriers to prevent access of desert tortoises to work sites through access road entry points.
- Following installation, long-term desert tortoise exclusion fencing will be inspected quarterly.
- All damage to long-term or short-term desert tortoise exclusion fencing will be immediately blocked to prevent desert tortoise access and repaired within 72 hours.
- Desert tortoise exclusion fencing will be checked for damage when there is surface flow of water due to a rain event that may damage the fencing.
- **AM-DFA-ICS-11:** Following fencing of project footprints or short-term construction areas with desert tortoise exclusion fencing, clearance surveys covering the entire fenced area will be performed to remove all remaining desert tortoises.
- Clearance surveys in areas enclosed by desert tortoise exclusion fencing will be performed by a Designated Biologist (see Glossary of Terms) within 72 hours of fencing when tortoise are above ground, otherwise seasonally active, or following a rain event.
- The USFWS or project applicant (see **AM-DFA-ICS-3**) is responsible for translocating all desert tortoises found during clearance surveys off site per the protocols in the Desert Tortoise Field Manual (USFWS 2009) or the most up-to-date USFWS protocol prior to beginning pre-construction or construction Covered Activities within the enclosed areas. All desert tortoise blood sample collection and health assessments required for translocation planning or other purposes will be performed according to approved USFWS protocols and CDFW guidance.

4. Construction Monitoring and Practices

- **AM-DFA-ICS-12:** Following the clearance surveys within projects sites that are fenced with long-term desert tortoise exclusion fencing (as described in **AM-DFA-ICS-11**), a Designated Biologist (see Glossary of Terms) will monitor initial clearing and grading activities to ensure that desert tortoises missed during the initial clearance survey are moved from harm's way.
- A Designated Biologist will inspect construction pipes, culverts, or similar structures: (a) with a diameter greater than 3 inches, (b) stored for one or more

nights, (c) less than 8 inches aboveground and (d) within desert tortoise habitat (such as, outside the long-term fenced area), before the materials are moved, buried, or capped.

- As an alternative, cap such materials before storing outside the fenced area or placing on pipe racks. Pipes stored within the long-term fenced area after completing desert tortoise clearance surveys will not require inspection.
- **AM-DFA-ICS-13:** When working in desert tortoise habitat in areas where protocol or clearance surveys are required, biological monitoring will occur with any geotechnical boring or geotechnical boring vehicle movement to ensure no desert tortoises are killed or burrows are crushed.
- **AM-DFA-ICS-14:** Inspect the ground under the vehicle for the presence of desert tortoise any time a vehicle or construction equipment is parked in desert tortoise habitat outside of areas fenced with desert tortoise exclusion fencing. If a desert tortoise is seen, it may move on its own. If it does not move within 15 minutes, a Designated Biologist may remove and relocate the animal to a safe location.

AM-DFA-ICS-15: Ensure vehicular traffic will not exceed 25 miles per hour within the delineated project areas or on access roads in desert tortoise habitat. Operations

- Implement **AM-DFA-ICS-14** and **AM-DFA-ICS-15** during operations.

Flat-Tailed Horned Lizard

- **AM-DFA-ICS-16:** Comply with the conservation goals and objectives, criteria, and management planning actions identified in the most recent revision of the Flat-tailed Horned Lizard Rangewide Management Strategy (RMS).
- Covered Activities will include appropriate design features using the most current information from the RMS and RMS Interagency Coordinating Committee to minimize adverse impacts during siting, design, pre-construction, construction, and decommissioning; ensure that current or potential linkages and habitat quality are maintained; reduce mortality; minimize other adverse impacts during operation; and ensure that Covered Activities have a neutral or positive effect on the species.

Bird Covered Species

Bendire's Thrasher

Operations

- **AM-DFA-ICS-17:** If Bendire's thrasher is present, conduct biological monitoring (see Glossary of Terms) to ensure that Bendire's thrasher individuals are not

directly affected by operations (i.e., mortality or injury, direct impacts on nest, eggs, or fledglings).

California Condor

Siting, Design, Pre-Construction, Construction, and Decommissioning

- **AM-DFA-ICS-18:** Avoid direct contact and take of California condors.
- If a condor is identified at a construction site, the Designated Biologist (see Glossary of Terms) will immediately notify the DRECP Coordination Group.
- Any actions taken to encourage condors to leave an area that may result in harassment of the bird will be conducted by a Designated Biologist (see Glossary of Terms).
- **AM-DFA-ICS-19:** Flight activity (e.g., surveys, construction, as well as operation and maintenance activities) related to Covered Activities will not be allowed in the airspace extending to 3,000 feet above condor nest sites.
- **AM-DFA-ICS-20:** Structures supported by guy wires will be marked with recommended bird deterrent devices at the appropriate spacing intervals.
- **AM-DFA-ICS-21:** All equipment and work-related materials (including loose-wires, open containers or other supplies or materials) will be contained in closed containers either in the work area or placed inside vehicles.
- **AM-DFA-ICS-22:** When feasible, ethylene glycol-based anti-freeze or other ethylene glycol-based liquid substances will be avoided, and propylene glycol-based antifreeze will be used. Vehicles and equipment using ethylene glycol based substances will be inspected before and after field use as well as during storage on project sites for leaks and puddles. Standing fluid will be remediated without unnecessary delay.

Operations

Implement **AM-DFA-ICS-18** through **AM-DFA-ICS-22** during operations, in addition to the following:

- **AM-DFA-ICS-23:** Covered Activities with the potential to take condors should consult with the DRECP Coordination Group to evaluate a project's risk to condors given the project location, technology, and current status of the condor population. Covered Activities that are determined to have a potential risk of taking condors will implement the best detect, deter, and curtailment strategy available at the time of construction to assure no take of condors. The strategy must be approved by the DRECP Coordination Group.

- **AM-DFA-ICS-24:** If condors begin to regularly visit a project site, the following additional measures will be implemented:
- Barriers, including welded wire fabric or hardware cloth, will be installed to prevent access around any facility element that poses a danger to condors.
- Stainless steel lines, rather than poly chemical lines will be used to preclude condors from obtaining and ingesting pieces of poly chemical lines.
- Landing deterrents, including Daddi Long Legs or porcupine wire, will be attached to the walking perching substrates.
- **AM-DFA-ICS-25:** A Condor Operations Strategy (COS) will be developed and implemented on a project-specific basis with the goal of avoiding mortality from operations of Covered Activities. No take of condor will be permitted in the form of kill or injury from operation of Covered Activities.

Golden Eagle

The USFWS has determined that it can authorize some take of golden eagles each year for activities in the Plan Area. Based on the 2013 analysis, the number of golden eagles that could be taken in the Plan Area in 2014 would be 15; however, the number is to be calculated annually and will go up or down depending on factors such as implementation of projects that take golden eagles inside or outside the Plan Area and the population status of golden eagles. The following CMAs would be implemented to avoid and minimize the take of golden eagles from the siting, construction, operations and decommissioning of Covered Activities under the DRECP. The approach to determining Golden Eagle coverage in the DRECP is described in further detail in Appendix H.

Siting, Design, Pre-Construction, Construction, and Decommissioning

- **AM-DFA-ICS-26:** Provide protection from loss and harassment of active nests through the following actions:
- Covered Activities will not be sited or constructed within 1-mile of any active or alternative golden eagle nest within an active golden eagle territory (see Appendix H).
- For active nests with recreational conflicts that risk the occurrence of take, provide public notification (e.g., signs) of the sensitive area and implement seasonal closures as appropriate.
- **AM-DFA-ICS-27:** Loss of habitat within a 1 to 4 mile radius around active or alternative eagle nests will be limited to less than 20% (see "DRECP disturbance cap" in the Glossary of Terms).

- **AM-DFA-ICS-28:** If the DRECP Coordination Group and approving agencies determine take of golden eagle is reasonably foreseeable or there is a potential for take of golden eagle, conduct 2 years of pre-project golden eagle surveys (per Pagel et al. 2010).
- **AM-DFA-ICS-29:** Wind projects and solar projects involving a power tower will conduct 2 years of pre-construction risk assessment surveys per USFWS Eagle Conservation Plan Guidance. These surveys will be conducted in addition to, and may be conducted concurrently with, the pre-project golden eagle surveys described above in **AM-DFA-ICS-28**, if applicable.
- **AM-DFA-ICS-30:** Project proponents of Covered Activities will conduct a risk assessment per the USFWS Eagle Conservation Plan Guidance using available information as well as the data collected in the pre-project golden eagle surveys in **AM-DFA-ICS-28** and pre-construction risk assessment surveys in **AM-DFA-ICS-29**, if applicable.
- **AM-DFA-ICS-31:** Implement site-specific golden eagle mortality monitoring in support of the pre-construction risk assessment surveys described in **AM-DFA-ICS-29.**
- **AM-DFA-ICS-32:** If a permit for golden eagle take is determined to be necessary, the information gathered in **AM-DFA-ICS-28**, **AM-DFA-ICS-29**, and **AM-DFA-ICS-30** will be submitted together as an application.

Operations

- **AM-DFA-ICS-33:** For Covered Activities where ongoing take of golden eagles is anticipated, develop advanced conservation practices per USFWS Eagle Conservation Plan Guidance and the Appendix H.

Mammal Covered Species

Desert Bighorn Sheep

Within DFAs on BLM-administered lands Desert Bighorn Sheep CMAs would be implemented to the extent feasible and allowable under existing permits, leases, and allotment plans.

- **AM-DFA-ICS-34:** Access to, and use of, designated water sources will not be affected by Covered Activities in designated and new utility corridors.
- **AM-DFA-ICS-35:** Transmission projects and new utility corridors will minimize effects on access to, and use of, designated water sources.

Mohave Ground Squirrel

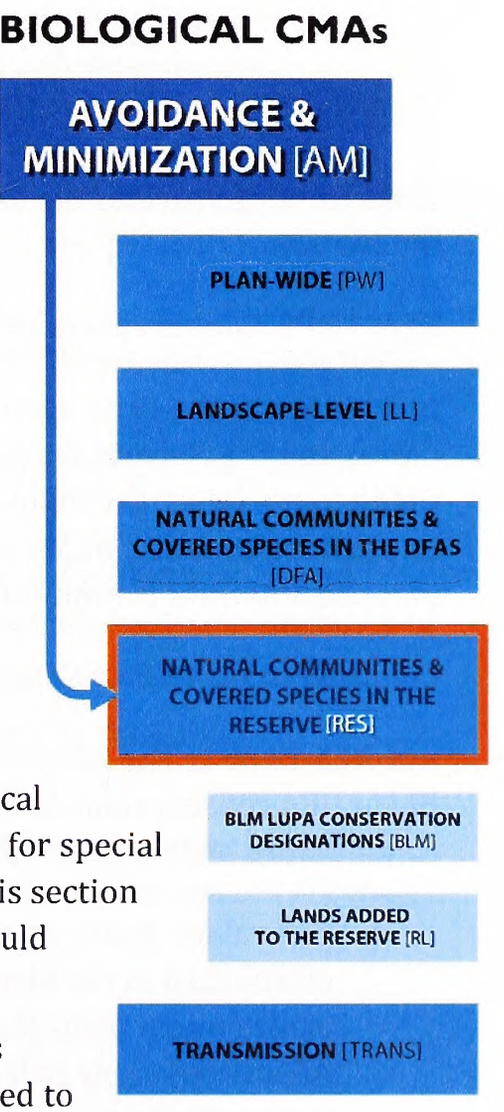
Siting, Design, Pre-Construction, Construction, and Decommissioning

- **AM-DFA-ICS-36:** During the typical active season (February 1 through August 31), conduct clearance surveys throughout the project site, immediately prior to initial ground disturbance in the areas depicted in Appendix H. In the cleared areas, perform construction monitoring to determine if squirrels have entered cleared areas. Contain disturbance to within cleared areas.
- Detected occurrences of Mohave ground squirrel will be flagged and avoided, with a minimum avoidance area of 50 feet, until the squirrels have moved out of harm's way. A Designated Biologist (see Glossary of Terms) may also actively move squirrels out of harm's way.
- **AM-DFA-ICS-37:** Protocol surveys (see Glossary of Terms) would be required for Covered Activities in Mohave ground squirrel population centers and linkages as indicated in Appendix H. Results of protocol surveys will be provided to the DRECP Coordination Group. For areas where Mohave ground squirrels are not detected during protocol surveys and absence is inferred, the survey result will be reviewed and verified by the DRECP Coordination Group prior to initiating Covered Activities.
- **AM-DFA-ICS-38:** Covered Activities sited in a Mohave ground squirrel linkage (see Appendix H) are required to analyze the potential effects on connectivity through the linkage to determine whether the function of the linkage will be maintained after construction and during project operations. Connectivity will be assessed by considering pre- and post-project ability of the area to support resident Mohave ground squirrels and provide for dispersal of their offspring to population centers outside the linkage, and dispersal through the linkage between population centers.
- Covered Activities that occur in Mohave ground squirrel linkages shown in Appendix H must be configured and located in a manner that does not diminish Mohave ground squirrel population and habitat connectivity through the linkage.
- **AM-DFA-ICS-39:** Disturbance of suitable habitat within the Mohave ground squirrel important areas will not occur during the typical dormant season (August 1 through February 28) unless absence is inferred and is supported by protocol surveys and other available data during the previous active season.
- **AM-DFA-ICS-40:** Within the Mohave ground squirrel range configure solar panel and wind turbine arrays to allow areas of native vegetation that will potentially facilitate Mohave ground squirrel movement through the site. This may include raised and/or rotating solar panels or open space between rows of panels or turbines. Fences surrounding sites should be permeable for Mohave ground squirrels.

Operations

- **AM-DFA-ICS-41:** For any ground-disturbing (e.g., vegetation removal, earthwork, trenching) activities, occurrences of Mohave ground squirrel will be flagged and avoided, with a minimum avoidance area of 50 feet, until the squirrels have moved out of harm's way. A Designated Biologist (see Glossary of Terms) may also actively move squirrels out of harm's way.
- **AM-DFA-ICS-42:** Rodenticides will not be used to manage rodents on project sites within the range of the Mohave ground squirrel. Use of rodenticide inside of buildings is allowed.

II.3.1.2.5.5 Natural Communities and Covered Species Avoidance and Minimization CMAs in the Reserve



The reserve design developed for each alternative from the reserve design process described in Section I.3.4.4 (i.e., the DRECP Plan-Wide Reserve Design Envelope for each alternative) includes the resource protections and management within the BLM LUPA conservation designations (i.e., NLCS, ACECs, and Wildlife Allocations) and the Conservation Planning Areas where conservation land acquisitions and management as well as conservation actions would occur through plan implementation to contribute to achieving the BGOs.

There are two sets of biological CMAs that apply in the reserve: the biological CMAs for BLM LUPA conservation designations and the biological CMAs for non-BLM LUPA lands added to the reserve through implementation.

- **BLM LUPA conservation designations** – The biological CMAs are partnered with the BLM Management Plans for special land allocations and are referenced in this section. This section also describes any additional biological CMAs that would apply to BLM LUPA conservation designations.
- **Lands added to the reserve** – These biological CMAs apply to allowable Covered Activities in the lands added to the reserve (i.e., transmission projects and conservation activities).

For both the BLM LUPA conservation designations and the lands added to the reserve, the applicable CMAs for DFAs would be implemented in addition to the applicable biological CMAs provided in this section.

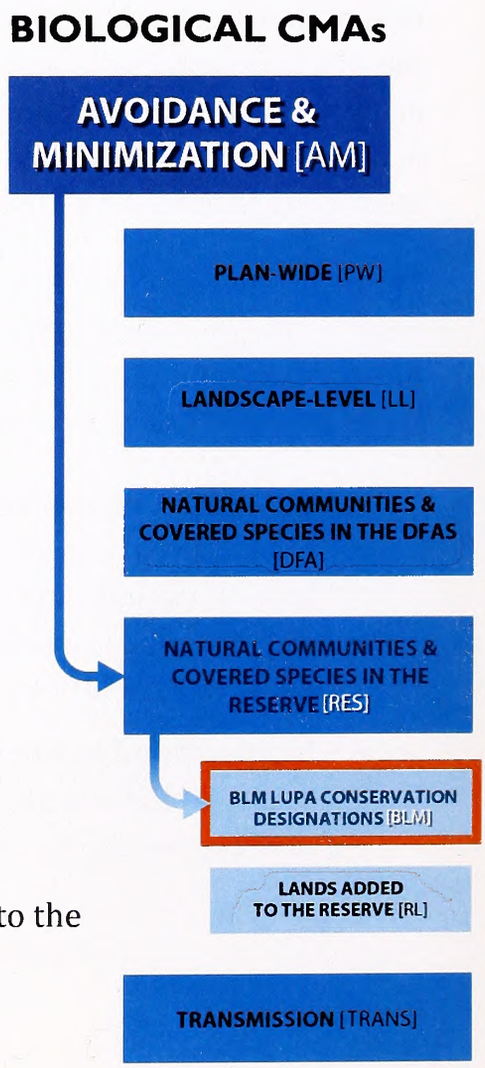
In addition to the resource protections and management in these areas, other mechanisms that contribute to the natural community and Covered Species Plan-wide BGOs include:

- **Implementation of the Plan-Wide CMAs –** Many of the Plan-wide CMAs (Section II.3.1.2.5.2) address avoidance and minimization designed to protect and maintain natural communities and Covered Species (e.g., resource setback standards, standard practices for hydrology and water resources, standard practices for soil resources, and standard practices for weed management).
- **Implementation of Landscape-level Biological CMAs –** Landscape-level CMAs (Section II.3.1.2.5.3) have been identified to provide additional avoidance and minimization for specific landscape scale processes, that are also designed to protect and maintain certain natural communities and Covered Species.

The following provides the natural community and Covered Species biological CMAs within the reserve.

BLM LUPA Conservation Designations

In addition to the Plan-wide CMAs, landscape-level CMAs, and the Natural Communities and Covered Species CMAs in the DFAs, the following CMAs would be implemented within BLM conservation designations for the identified natural communities and Covered Species.



Common to BLM LUPA Conservation Designations

AM-RES-BLM-1: The following CMA will be implemented on BLM LUPA conservation designations for all natural communities and Covered Species:

- The values, goals, objectives, and management actions established in the BLM special land allocation management plans (i.e., NLCS, ACEC and Wildlife Allocation) apply to land with BLM LUPA conservation designations, as described in Appendix L. Natural communities and Covered Species within BLM LUPA conservation designations will be managed according to the unit-specific management actions to maintain the

vegetation, fish and wildlife, and other resource values within the NLCS/ACEC/Wildlife Allocation unit as described in the BLM special land allocation management plans (Appendix L).

Dune Natural Communities and Covered Species (DUNE)

North American Warm Desert Dune and Sand Flats

- **AM-RES-BLM-DUNE-1:** Non-Covered Activities will be prohibited within Aeolian transport corridors, except as needed to maintain existing development or improve land management capabilities. Any discretionary approvals for maintenance of existing facilities, or renewal of existing ROW, will determine whether those facilities are adversely impacting hydrologic or Aeolian processes, rare natural community alliances, or Covered Species. If existing facilities, or maintenance thereof, adversely affect these values, BLM, as part of any discretionary approval to maintain the project, or for renewal of a ROW grant, will determine if the adverse effects of the existing facility and associated maintenance can be reasonably rectified, avoided/minimized, or mitigated, and if so, require appropriate measures as needed to reduce any potentially significant impacts to the extent legally permissible.
- **AM-RES-BLM-DUNE-2:** Non-Covered Activities, and any newly constructed roads and/or routes, will comply with the following:
  - Setback 0.25 mile from Aeolian corridors and Mojave fringe-toed lizard suitable habitat.
- Be sited and/or configured to maintain the spatial extent, habitat quality, and ecological function of Aeolian transport corridors unless related to maintenance of existing facilities.
  - Roads will not be paved, except as deemed necessary by the DRECP Coordination Group.
  - Newly constructed roads and/or routes may be considered if they benefit minimization measures for natural, cultural and ecological resources of concern.

Plant Covered Species (PLANT)

Common to Plant Covered Species CMAs

- **AM-RES-BLM-PLANT-1:** For all land allocations, substations will be sited in such a way as to avoid suitable habitat for all plant Covered Species.

Individual Covered Species (ICS)

Reptile Covered Species

Desert Tortoise

- **AM-RES-BLM-ICS-1:** Any area that has been or will be identified as a Tortoise Translocation Area, as part of the fulfillment of an ESA Section 7 Biological Opinion, will be identified as a development avoidance area. No development that requires translocation of tortoises, will be authorized within these areas and they will be managed for the conservation of desert tortoise.
- **AM-RES-BLM-ICS-2:** All activities, except transmission projects, that will result in the long-term removal of habitat supporting an adult desert tortoise density (i.e., individuals 160mm or more) of more than 5 per square mile or more than 35 individuals total are prohibited. The number of desert tortoises on-site will be based on estimates derived from the protocol surveys described in **AM-DFA-ICS-3** using the USFWS's pre-project survey protocol.
- **AM-RES-BLM-ICS-3:** All activities, except transmission projects, in desert tortoise TCAs or linkages that will result in long-term removal of habitat supporting more than 5 adult individuals are prohibited. The number of desert tortoises on-site is based on estimates derived from the protocol surveys described in **AM-DFA-ICS-3** using the USFWS's pre-project survey protocol.
- **AM-RES-BLM-ICS-4:** All activities will not exceed the long-term ground disturbance cap (see "BLM disturbance cap" in the Glossary of Terms) shown below in Table II.3-12 for portions of the BLM LUPA conservation designations that are required for desert tortoise conservation.

Table II.3-12
Desert Tortoise Ground Disturbance Caps in the BLM LUPA Conservation Designations

Applicable Areas[1]	Disturbance Cap[2]
Tortoise Conservation Areas	
Desert Tortoise Research Natural Area	0.0%
Fremont-Kramer Area of Critical Environmental Concern and Critical Habitat Unit	0.5%
Superior-Cronese Area of Critical Environmental Concern and Critical Habitat Unit	0.5%
Ord-Rodman Area of Critical Environmental Concern and Critical Habitat Unit	0.5%
Pinto Mountains Area of Critical Environmental Concern and Critical Habitat Unit	0.5%
Chuckwalla Area of Critical Environmental Concern and Critical Habitat Unit	0.5%
Chemehuevi Desert Area of Critical Environmental Concern and Critical Habitat Unit	0.5%

Table II.3-12
Desert Tortoise Ground Disturbance Caps in the BLM LUPA Conservation Designations

Applicable Areas[1]	Disturbance Cap[2]
Piute Valley Area of Critical Environmental Concern and Critical Habitat Unit	0.5%
Joshua Tree National Park	N/A
Shadow Valley Area of Critical Environmental Concern	0.5%
Ivanpah Valley Area of Critical Environmental Concern (Includes Critical Habitat on BLM Land)	0.1%
Mojave National Preserve	N/A
Death Valley National Park	N/A
Desert Tortoise Linkages	
Ord-Rodman to Superior-Cronese to Mojave National Preserve	1%
Superior-Cronese to Mojave National Preserve to Shadow Valley to Death Valley National Park Linkage	1%
Joshua Tree National Park and Pinto Mountains Area of Critical Environmental Concern to Chemehuevi Linkage	1%
Death Valley National Park to Nevada Test Site	1%
Ivanpah Valley Linkage	0.1%
Chemehuevi to Chuckwalla Linkage	0.1%
Pinto Wash Linkage	0.1%
Ord-Rodman to Joshua Tree Linkage	0.5%
Fremont Kramer to Ord-Rodman Linkage	0.5%
High-value Colorado Desert Habitat	1%

[1] Tortoise Conservation Areas are shown in Appendix H.

[2] All disturbance thresholds identified for a given TCA, desert tortoise linkage, or other portion of the desert tortoise reserve are allocated proportionally to each jurisdiction managing land within that geographic area. For example if 100 acres is the allowable disturbance within a given TCA's boundary and the BLM administers 99% of the land within that TCA, the BLM's allotted disturbance level will be 99 acres and the remaining disturbance will be proportionally divided among the other jurisdictions (i.e., county, city, state, etc.) within that unit.

- **AM-RES-BLM-ICS-5:** A Designated Biologist (see Glossary of Terms) will accompany any geotechnical testing equipment to ensure no tortoises are killed and no burrows are crushed.
- **AM-RES-BLM-ICS-6:** New roads will undergo a route designation process, and for BLM-administered lands designated through a Travel and Transportation Management Plan within BLM LUPA conservation designations.

Bird Covered Species

Gila Woodpecker

- **AM-RES-BLM-ICS-7:** Covered Activities will avoid the eastern Chuckwalla Mountains wilderness, to protect previously occupied and future restored suitable nesting habitat in the vicinity of Corn Springs, or to the entire expanse of Milpitas Wash, unless administratively necessary or necessary to support existing facilities, as determined by BLM.
- **AM-RES-BLM-ICS-8:** In areas of known disturbance or high likelihood of disturbance to breeding pairs during the breeding season, BLM will analyze establishing seasonal closures and buffers in specific areas to minimize nest abandonment.

Golden Eagle

- **AM-RES-BLM-ICS-9:** The cumulative loss of foraging habitat within a 4 mile radius around active or alternative golden eagle nests (see Appendix H) in the reserve will be limited to less than 10%.

Mammal Covered Species

Desert Bighorn Sheep

On BLM-administered lands, Desert Bighorn Sheep CMAs would be implemented to the extent feasible and allowable under existing permits, leases, and allotment plans.

- **AM-RES-BLM-ICS-10:** Significant new ground disturbance, excluding transmission projects in designated and new utility corridors, will not negatively affect access and use to known or potential water sources used by bighorn sheep.
- **AM-RES-BLM-ICS-11:** BLM designated routes will be appropriately signed to limit use to the roads and trails, if necessary to reduce impacts from the recreational use to lambing and rearing.
- Rock climbing restrictions during the peak lambing and rearing season (March 1 through May 31) on BLM-administered lands will be considered if data indicates likely disturbance to lambing and rearing in occupied sheep core locations.
- **AM-RES-BLM-ICS-12:** For non-BLM Lessee's, domestic livestock will not be allowed to be trailed (transported on foot [herded]) through known or likely to be occupied bighorn sheep habitat, to minimize exposure and disease transmission to bighorn sheep. Vehicular movement of livestock will be allowable. Livestock will not be allowed to exit the vehicle transport, except in emergencies, while on BLM-administered land.

- For BLM Lessee's, consistent with existing (at time of ROD) leases and allotment plans, domestic livestock will be controlled and moved to minimize exposure and disease transmission to bighorn sheep, using techniques including but not limited to fencing with adequate buffers, vehicle transport, and timing. Vehicular movement of livestock will be allowable. Livestock will remain in the vehicle transport, except in emergencies, while on BLM-administered land, unless at the destination.
- For BLM grazing Lessee's, trailing of domestic sheep between discontiguous allotments, may be permittable if done in a manner, including timing, which prevents interaction with bighorn sheep and avoids disease transmission from domestic sheep to bighorn sheep.
- At the time of grazing allotment lease and/or allotment plan renewal, a measure to eliminate trailing within allotments (movement of domestic livestock on foot or herding) through known or likely to be occupied bighorn sheep habitat will be considered and analyzed using the best available science on domestic livestock disease transmission to bighorn sheep.
- **AM-RES-BLM-ICS-13:** To reduce the impact on bighorn sheep from domestic livestock in grazing allotments, BLM proposes:
- Permanently closing specified vacant allotments
- Accepting voluntarily retirement of allotments
- Accepting donation of allotments as one component of mitigation
- Requiring specific terms and conditions in renewed grazing permits, as needed
- Considering converting domestic sheep allotments to cattle allotments.
- Consistent with existing or renewed grazing allotment plans, remove or alter livestock fencing to enhance bighorn sheep movements.

Mohave Ground Squirrel

- **AM-RES-BLM-ICS-14:** Long-term vegetation removal within Important Areas will be prohibited, unless the land use is compatible with Mohave ground squirrel protection and management. Compatible land uses are those described in the BLM LUPA for ACECs where Mohave ground squirrel occur.
- **AM-RES-BLM-ICS-15:** Any disturbance within suitable habitat will require the same protocol survey (**AM-DFA-ICS-37**), clearance survey (**AM-DFA-ICS-36**), and construction monitoring (**AM-DFA-ICS-41**) measures for DFAs.
- **AM-RES-BLM-ICS-16:** BLM will not authorize the use of rodenticides on BLM-administered land in areas where Mohave ground squirrel are protected and managed. Use of rodenticide inside of buildings is allowed.

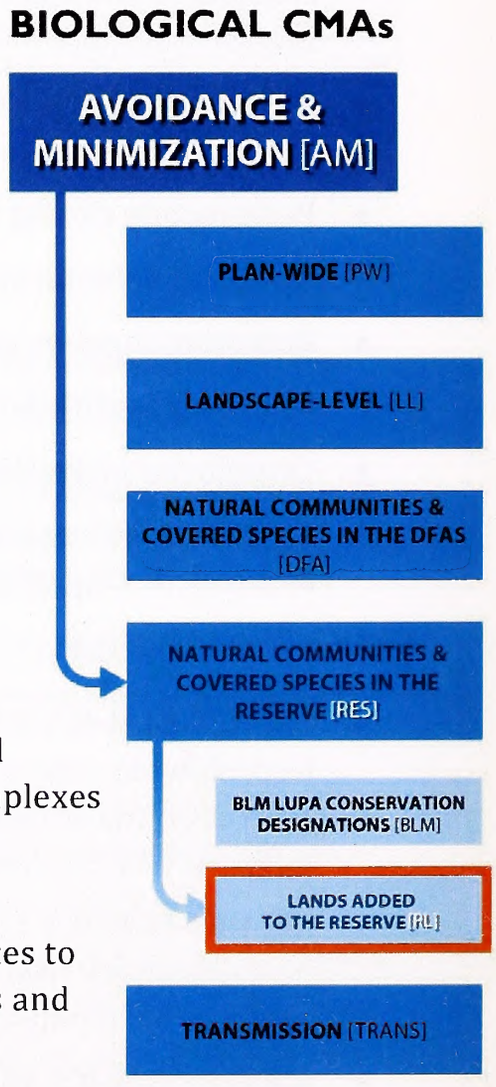
- **AM-RES-BLM-ICS-17:** On BLM conservation lands, to the maximum extent practicable and/or as allowed under existing permits establish and maintain fencing to exclude cattle, horses, sheep, and other potential grazers from areas that are protected and managed for Mohave ground squirrel and from vegetation stands that are important foraging habitat, including winterfat and spiny hopsage.

Bendire's Thrasher

Operations

- **AM-RES-BLM-ICS-18:** If Bendire's thrasher is present, conduct biological monitoring (see Glossary of Terms) to ensure that Bendire's Thrasher individuals are not directly affected by operations (i.e., mortality or injury, direct impacts on nest, eggs, or fledglings).

Lands Added to the Reserve



In addition to the Plan-wide CMAs, landscape-level CMAs, and the Natural Communities and Covered Species CMAs in the DFAs, the following CMAs would be implemented within lands added to the reserve for the identified natural communities and Covered Species.

Dune Natural Communities and Covered Species (DUNE)

North American Warm Desert Dune and Sand Flats

- **AM-RES-RL-DUNE-1:** To the maximum extent practicable (see "unavoidable impacts to resources" in the Glossary of Terms), remove existing barriers and prohibit new barriers or obstructions in sand source areas and Aeolian transport corridors where needed to maintain or restore ecologically functional geomorphic processes and the extant sand dune complexes in the Plan Area.
- **AM-RES-RL-DUNE-2:** Monitor and enforce vehicular restrictions and travel off designated routes to prevent degradation of psammophytic communities and rare natural community alliances, and mortality to Covered Species.

Mojave Fringe-Toed Lizard

- **AM-RES-RL-DUNE-3:** Covered Activities will be sited and designed to avoid impacts to sand transport within Aeolian corridors.
- Non-Covered Activities will be sited to avoid reductions in sand supply to the Aeolian corridor.

Bat Covered Species (BAT)

Pallid Bat

- **AM-RES-RL-BAT-1:** Impacts to desert scrub natural communities within 3 miles of occupied or presumed occupied roosts (as described in **AM-DFA-BAT-1**) will not exceed 5% (see "DRECP disturbance cap" in the Glossary of Terms).

Townsend's Big-Eared Bat

- **AM-RES-RL-BAT-2:** Impacts to forest, woodland, edge habitats, and microphyll woodland natural communities within 3 miles of occupied or presumed occupied roosts (as described in **AM-DFA-BAT-1**) will not exceed 5% (see "DRECP disturbance cap" in the Glossary of Terms).

Plant Covered Species (PLANT)

Common to Plant Covered Species CMAs

- **AM-RES-RL-PLANT-1:** Impacts to suitable habitat for all plant Covered Species within lands added to the reserve will be limited to 1% of their suitable habitat in the Plan Area (see "DRECP disturbance cap" in the Glossary of Terms).
- **AM-RES-RL-PLANT-2:** Occurrences of plant Covered Species, including designated transmission corridors, will be avoided within the lands added to the reserve to the maximum extent practicable (see "unavoidable impacts to resources" in the Glossary of Terms).
- All Covered Activities will require an avoidance setback of 0.25 mile from plant Covered Species occurrences. Setbacks will be placed strategically to protect ecological processes.
- **AM-RES-RL-PLANT-3:** Substations will be sited in such a way as to avoid all suitable habitat.

Individual Covered Species (ICS)

Reptile Covered Species

Desert Tortoise

- **AM-RES-RL-ICS-1:** Any area that has been or will be identified as a Tortoise Translocation Area, as part of the DRECP reserve, project requirement, fulfillment of an ESA Section 7 Biological Opinion or Section 10 permit, will be identified as a development avoidance area. No development that requires translocation of tortoises, will be authorized within these areas and they will be managed for the conservation of desert tortoise.
- **AM-RES-RL-ICS-2:** Covered Activities, except transmission projects, that will result in the long-term removal of habitat supporting an adult desert tortoise density (i.e., individuals 160mm or more) of more than 5 per square mile or more than 35 individuals total are prohibited. The number of desert tortoises on-site will be based on estimates derived from the protocol surveys described in **AM-DFA-ICS-3** using the USFWS's pre-project survey protocol.
- **AM-RES-RL-ICS-3:** Covered Activities, except transmission projects, in Desert Tortoise TCAs or linkages that will result in long-term removal of habitat supporting more than 5 adult individuals are prohibited. The number of desert tortoises on-site is based on estimates derived from the protocol surveys described in **AM-DFA-ICS-3** using the USFWS's pre-project survey protocol.
- **AM-RES-RL-ICS-4:** A Designated Biologist (see Glossary of Terms) will accompany any geotechnical testing equipment to ensure no tortoises are killed and no burrows are crushed. **AM-RES--ICS-5:** To the maximum extent practicable (see "unavoidable impacts to resources" in the Glossary of Terms), transmission projects (including substations) will be sited on existing disturbed areas within the transmission corridors.
- **AM-RES-RL-ICS-6:** Existing roads and open routes will be used to establish firebreaks in the conserved lands, where warranted, outside of fire season. **AM-RES-RL-ICS-7:** Guzzlers located within portions of the lands added to the reserve that are required for desert tortoise conservation will have escape ramps.

Flat-Tailed Horned Lizard

- **AM-RES-RL-ICS-8:** Covered Activities will not be located in Flat-tailed horned lizard Management Areas.
- Disturbance from Covered Activities will be limited to 10 acres or less per authorization.

- **AM-RES-RL-ICS-9:** No Covered Activities that will result in surface occupancy are allowed within the Ocotillo Wells Research Area.

Bird Covered Species

Bendire's Thrasher

Operations

- **AM-RES-RL-ICS-10:** If Bendire's thrasher is present, conduct biological monitoring (see Glossary of Terms) to ensure that Bendire's Thrasher individuals are not directly affected by operations (i.e., mortality or injury, direct impacts on nest, eggs, or fledglings).

Gila Woodpecker

- **AM-RES-RL-ICS-11:** Covered Activities will be setback 150 feet from the outer edge of any saguaro cactus stand within or bordering the southeastern Palo Verde or Whipple Mountains Wilderness Areas or any other area along the Colorado River.

Golden Eagle

- **AM-RES-RL-ICS-12:** The cumulative loss of foraging habitat within a 4 mile radius around active or alternative golden eagle nests (see Appendix H) in the reserve will be limited to less than 10% (see "DRECP disturbance caps" in the Glossary of Terms).

Mammal Covered Species

Desert Bighorn Sheep

- **AM-RES-RL-ICS-13:** During the bighorn sheep peak lambing and rearing period (December 1 through May 31), a seasonal closure for all recreational permitted activities will be implemented in and near occupied lambing and rearing areas.
- Exceptions to the seasonal closures will be for human safety activities. Prohibit rock climbing during the peak lambing and rearing season (December 1 through May 31) in locations of known disturbance to sheep lambing and rearing or highly likely to cause disturbance to lambing and rearing in occupied desert bighorn sheep habitat.
- Eliminate disturbance from recreation with appropriate signage, education, and seasonal closure of roads within lambing areas.
- **AM-RES-RL-ICS-14:** Covered Activities, including transmission projects in designated and new utility corridors, will not limit access to and use of known or

potential water sources for desert bighorn sheep (including at tinajas, water catchments, washes, ponds, artificial water sources, etc.).

- **AM-RES-RL-ICS-15:** Effectively manage threats related to bighorn sheep contact with feral burros and horses, and domestic cattle, goats and sheep (feral animals) in desert big horn sheep mountain range herd units.

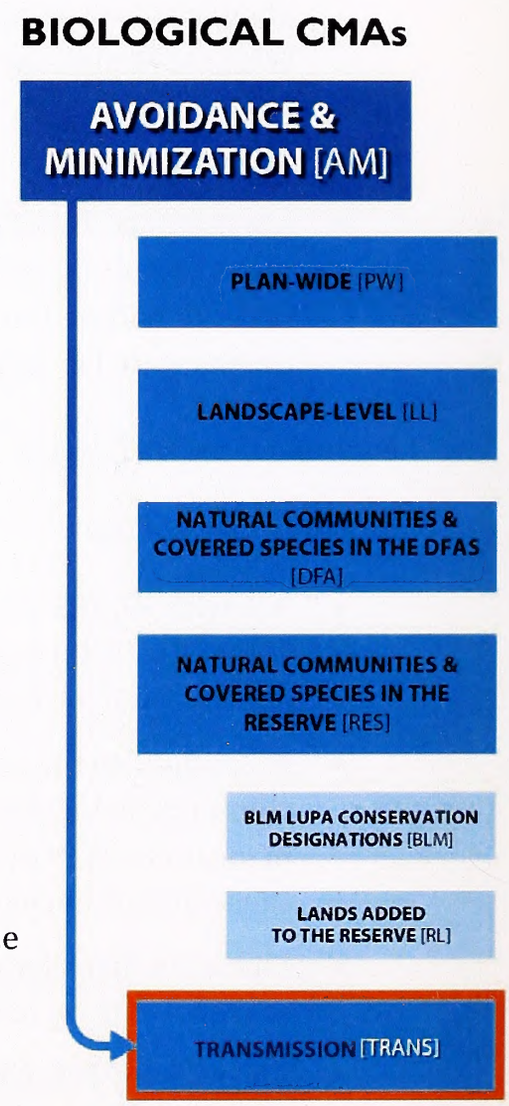
Mohave Ground Squirrel

Same as the CMAs for BLM LUPA conservation designations, except as follows:

- **AM-RES-RL-ICS-16:** The types and level of activities or land uses considered to be compatible with Mohave ground squirrel protection and/or management will be determined through consultation between the land manager and the DRECP Coordination Group.

II.3.1.2.5.6 Transmission Avoidance and Minimization CMAs

As described in Section II.3.1.4, new or modified/expanded transmission projects, including transmission lines, access roads, and substations are included as Covered Activities under the Plan. As such, the biological CMAs described in the previous sections for Covered Activities would generally apply to transmission projects. However, there are some instances where the biological CMAs for Covered Activities require changes to properly apply to the specific attributes of transmission projects. These changes are described below for transmission projects in the DFAs and the reserve.



DFAs and Reserve

Transmission projects in the DFAs and reserve (BLM LUPA conservation designations and lands added to the reserve) would implement the Plan-wide, landscape-level, natural community, and Covered Species CMAs for those areas, respectively, with the following additions:

- **AM-TRANS-1:** Bury electrical collector lines along roads or other previously disturbed paths to minimize new surface disturbance, restrict perching opportunities for the Common Raven, and reduce collision risks, where feasible.

- **AM-TRANS-2:** Flight diverters will be installed on all transmission projects spanning or within 1,000 feet of stream and wash channels, canals, ponds, and any other natural or artificial body of water. The type of flight diverter selected will be subject to approval by the DRECP Coordination Group, and will be based on the best available scientific and commercial data regarding the prevention of bird collisions with transmission projects and guy wires.
- **AM-TRANS-3:** Avoid siting transmission projects that span canyons or are located on ridgelines. Site and design sufficient distance between transmission lines to prevent electrocution of condors.
- **AM-TRANS-4:** Restrict transmission projects to be within designated utility corridors and to be sited and designed to avoid, where possible, and otherwise minimize and offset impacts to sand transport processes in Aeolian corridors, rare natural community alliances, and Covered Species. Transmission substations will be sited to avoid Aeolian corridors, rare natural community alliances, and sand-dependent Covered Species habitats.

II.3.1.2.5.7 Compensation CMAs

In addition to the avoidance and minimization CMAs (Section II.3.1.2.5.1 through Section II.3.1.2.5.6) a key component of the biological CMAs are the compensation CMAs. Appendix H, Approach to Compensation, details the specific requirements, rationale, and estimated amount of compensation generated from impacts of Covered Activities that are summarized in this section. As part of the DRECP biological conservation strategy, the compensation generated from the impacts of Covered Activities is part of the DRECP's proportional contribution to Plan-wide conservation and towards achieving the BGOs.

As shown in Exhibit II.3-5, there are specific compensation requirements for impacts of Covered Activities during siting, construction, and decommissioning as well as for operational bird and bat Covered Species impacts. The compensation requirements for impacts from Covered Activities during siting, construction, and decommissioning (excluding operational impacts on bird and bat Covered Species) are expressed as compensation ratios that are used to calculate the required acquisition of a calculated compensation acreage, a corresponding compensation fee, eligible non-acquisition compensation actions, or a combination of these measures to fulfill the compensation requirements. Compensation for bird and bat Covered Species operational impacts would be fee based and calculated depending on the annual operational effects on birds and bat.

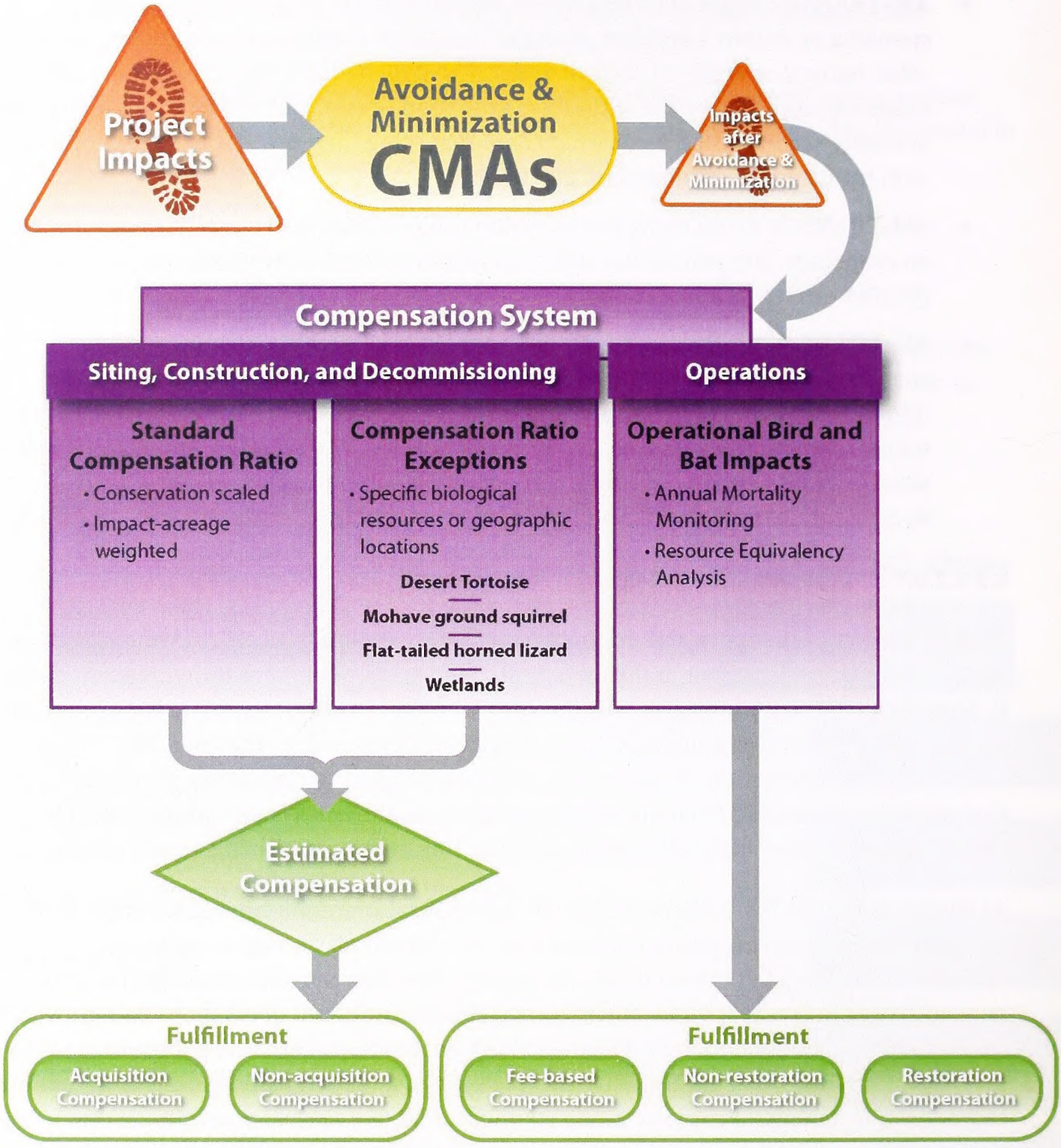


Exhibit II.3-5 Tiered Compensation System

Compensation Requirements for Siting, Construction, Terrestrial Operational, and Decommissioning Impacts

DRECP compensation requirements are expressed as compensation ratios, which are used to calculate how much compensation acreage would be required to offset the siting, construction, terrestrial operational, and decommissioning impacts. The approach for determining the estimated compensation requirements for impacts of Covered Activities involves quantifying the amount of impacts that would result from a project after implementation of avoidance and minimization CMAs (as described in Section II.3.1.2.5.1 through Section II.3.1.2.5.6) and applying the appropriate compensation ratios to the impacted areas. The resulting compensation acreage could then be fulfilled through acquisition of the determined compensation acreage, a corresponding compensation fee, eligible non-acquisition compensation actions, or a combination of these measures. Compensation criteria including the types of allowable compensation (e.g., acquisition or non-acquisition), the "kind" of compensation required (resource-specific compensation specifications), and any geographic requirements would be determined on a project-specific basis as described by the DRECP Conservation Area Assembly in Section II.3.1.5.5.

For impacts from Covered Activities (excluding operational impacts on bird and bat Covered Species), the compensation acreage requirement would be calculated by applying the "standard" compensation ratio, except for impacts to certain biological resources or in specific geographic locations where the compensation ratio "exceptions" would apply. The portion of the impacts from the Covered Activities within the exception area would be subject to the compensation ratio exceptions, and the portion of the impacts from the Covered Activities outside the exception area would be compensated at the standard compensation ratio. Transmission Covered Activities may have different compensation ratios depending on the location of the impacts from transmission Covered Activities, in the DFAs or in the reserve.

The standard compensation ratio was determined through the methodology described in Appendix H and was scaled based on how well biological resources was conserved in the Plan-wide reserve design ("conservation-scaled"), how much impact is expected to occur to that resource within each DFA ecoregion subarea ("impact acreage-weighted"), and was also informed by the development of the compensation ratio exceptions. As described in Appendix H, the compensation ratio exceptions would apply to the portion of Covered Activities that would impact specific resources or in specific geographic locations. In cases where more than one compensation ratio exception would apply, the highest compensation ratio would apply to the overlapping impact acreage. Both the standard compensation ratio and the compensation ratio exceptions are "acquisition-calibrated," meaning that they represent the ratio of acres that would need to be conserved for each acre of impact. These

acquisition-calibrated ratios would be the basis for converting acquisition compensation into corresponding non-acquisition compensation or a corresponding compensation fee.

The compensation requirements for impacts from Covered Activities during siting, construction, terrestrial operations, and decommissioning will be met by acquisition of the calculated compensation acreage, a corresponding compensation fee paid by to the DRECP Coordination Group, non-acquisition compensation actions, or a combination of these measures. Compensation criteria for land acquisitions and non-acquisition actions will be determined through implementation on a project-specific basis as described by the DRECP Conservation Area Assembly in Section II.3.1.5.5. The conversion from the acquisition-based compensation requirements to the equivalent fee based compensation will be determined on a project-by-project basis by the DRECP Coordination Group and will be based on the compensation acreage as calculated using the compensation ratios. Similarly, non-acquisition compensation actions equivalency to the acquisition-based compensation requirements will be determined on a project-by-project basis, will be based on the compensation acreage calculated by the compensation ratios, and will be approved by the DRECP Coordination Group. For each species, eligible non-acquisition actions and the proportion of the compensation type (shown as a percent for acquisition and non-acquisition) for the entire permit term are specified in Appendix H.

The following CMAs would be required for Covered Activities to determine the compensation acreage requirements for siting, construction, terrestrial operational, and decommissioning impacts:

- **COMP-1:** Impacts from Covered Activities in the DFAs will be compensated using the standard compensation ratio, except for the biological resources and specific geographic locations listed as compensation ratio exceptions that will use the compensation ratio exceptions summarized in Table II.3-13 below and described in further detail in Appendix H. The compensation acreage requirement calculated by the standard compensation ratio and the compensation ratio exceptions can be fulfilled through land acquisition compensation approved by the DRECP Coordination Group, through implementation of non-acquisition actions approved by the DRECP Coordination Group, or a combination of these options. Compensation criteria for land acquisitions and non-acquisition actions will be determined through implementation on a project-specific basis as described by the DRECP Conservation Area Assembly in Section II.3.1.5.5.

Table II.3-13
Compensation Ratios for the Impacts[1] of DRECP Covered Activities in the DFAs

Standard Compensation Ratio[1]	Compensation Ratio Exceptions[1]	
1:1	Desert tortoise[1]: Intact linkage habitat surrounding the Ord-Rodman critical habitat unit	2:1
	Mohave ground squirrel[1]: Key population centers	2:1
	Flat-tailed horned lizard[1]: FTHL Management Areas	RMS
	Wetlands[1]	1:1 (preserve) 1:1 (restore or enhance)

[1] See Appendix H, Table H-4a, for full footnotes.
RMS = Flat-Tailed Horned Lizard Rangewide Management Strategy

- **COMP-2:** Impacts from transmission Covered Activities in the DRECP Plan-Wide Reserve Design Envelope will be compensated using the standard compensation ratio, except for the biological resources and specific geographic locations listed as compensation ratio exceptions that will use the compensation ratio exceptions summarized in Table II.3-14 and described in further detail in Appendix H. The compensation acreage requirement calculated by the standard compensation ratio and the compensation ratio exceptions can be fulfilled through land acquisition compensation approved by the DRECP Coordination Group, through implementation of non-acquisition actions approved by the DRECP Coordination Group, or a combination of these options. Compensation criteria for land acquisitions and non-acquisition actions will be determined through implementation on a project-specific basis as described by the DRECP Conservation Area Assembly in Section II.3.1.5.5. Compensation for the impacts of transmission Covered Activities within desert tortoise critical habitat will be used for management of critical habitat in the same recovery unit as the impact.

Table II.3-14
Compensation Ratios for the Impacts of Transmission Covered Activities in the DRECP Plan-Wide Reserve Design Envelope

Standard Compensation Ratio[1]	Compensation Ratio Exceptions[1]	
1:1	Desert tortoise designated critical habitat	5:1
	Mohave ground squirrel[1]: Key population centers	2:1
	Flat-tailed horned lizard[1]: FTHL Management Areas	RMS
	Wetlands[1]	1:1 (preserve) 1:1 (restore or enhance)

[1] See Appendix H, Table H-4b, for full footnotes.
RMS = Flat-Tailed Horned Lizard Rangewide Management Strategy

Compensation Requirements for Operational Impacts to Covered Birds and Bats

The compensation for the impacts to bird and bat Covered Species from operational Covered Activities would be determined based on annual monitoring of bird and bat mortality and a fee assessed every 5 years to fund compensatory mitigation. Initial compensation fee for operational bird and bat impacts would be based on pre-project monitoring of bird use and estimated Covered bird and bat species take of the project. As described in Appendix H, the approach to calculating the operational bird and bat compensation is based on the total replacement cost for a given resource. This involves measuring the relative loss to a population (debt) resulting from an operational activity and the productivity gain (credit) to a population from the implementation of compensatory mitigation actions. The measurement of these debts and gains (using the same "bird years" metric as described in Appendix H) is used to estimate the necessary compensation fee.

The following CMA would be required for all Covered Activities to determine the compensation acreage requirements for impacts to bird and bat Covered Species during operations:

- **COMP-3:** The compensation for impacts to bird and bat Covered Species from operational Covered Activities will be based on the monitored impacts to bird and bat Covered Species during operations. Each project will include a monitoring program to provide project-specific information on annual operational effects on bird and bat Covered Species. The bird and bat mortality for each project will dictate the amount and type of compensation required to offset the effects of the project. Compensation will be based on a Resource Equivalency Analysis approach, described in Appendix H, which will estimate the replacement cost of services lost to bird and bat populations. Compensation will be satisfied by protecting, restoring, or otherwise improving habitat such that the carrying capacity or productivity is increased to offset the impacts resulting from the operational Covered Activities. Compensation may also be satisfied by non-restoration actions that reduce mortality risks to birds and bats (e.g., increased predator control and protection of roosting sites from human disturbance). Compensation may be in kind (i.e., through restoration activities lead by the proponent, with approval from the DRECP Coordination Group) or as a fee paid to restoration activities previously identified by the DRECP Coordination Group. The type and size of compensation actions necessary to offset losses are discussed in Appendix H.

Compensation Requirements for Impacts to Golden Eagle

- **COMP-4:** Project proponents of Covered Activities will provide specific golden eagle compensatory mitigation in accordance with USFWS Eagle Conservation Plan Guidance and Appendix H.
- **COMP-5**: The project proponents of Covered Activities will be required to contribute to a DRECP-wide golden eagle monitoring program.

II.3.1.3 Monitoring and Adaptive Management Program

The MAMP is an essential part of the DRECP conservation strategy. This section describes the framework designed to guide implementation of the MAMP, and includes the following sections:

- Section II.3.1.3.1: Purpose
- Section II.3.1.3.2: State and Federal Guidelines and Policies Related to Monitoring and Adaptive Management
- Section II.3.1.3.3: DRECP Adaptive Management Team
- Section II.3.1.3.4: Monitoring
- Section II.3.1.3.5: Adaptive Management Framework
- Section II.3.1.3.6: Information Management
- Section II.3.1.3.7: Nonbiological Resources MAMP

II.3.1.3.1 Purpose

The purpose of the DRECP MAMP is to provide the overarching programmatic framework for long-term monitoring of the progress of implementation of conservation actions, and monitoring overall implementation of plan objectives. The REAT agencies would use the MAMP as a key part of ensuring: (1) overall progress and compliance with the provisions of the DRECP, including the BLM LUPA, the NCCP and the GCP, prepared pursuant to Endangered Species Action Section 10(a)(1)(B) and the NCCPA; and (2) the most effective use of DRECP program funds. The MAMP encompasses monitoring for compliance with permit conditions (i.e., compliance monitoring), monitoring to determine progress towards achievement of BGOs (i.e., effectiveness monitoring), project-level monitoring, land use plan monitoring, and monitoring for validation of management actions. The approval agencies and the project proponent would be responsible for monitoring and reporting on actions implemented on project sites. The DRECP Coordination Group would be responsible for ensuring monitoring and reporting under the MAMP for compliance in the reserve. The REAT agencies, through implementation of the MAMP, would apply

monitoring results and other sources of information to management, including adaptive management, for DRECP actions.

Adaptive management, as a key part of the MAMP, is an iterative process designed to continually improve the understanding of managed systems and inform their management over time. A successful MAMP would allow the DRECP to meet its monitoring and management obligations in accordance with state and federal requirements. Further, the desert region has been, and is expected to continue to be, highly affected by climate change in the coming decades. Therefore, this MAMP would be integral to addressing the biotic and abiotic effects of climate change that are anticipated to occur during the term of the DRECP and beyond, and provide the framework for changing implementation approaches where needed.

The MAMP includes requirements for monitoring and management of biological resources on DRECP reserve lands, and monitoring and management of biological and nonbiological resources on BLM-administered lands. Recognizing that renewable energy production technology will change over time, the MAMP also includes a process for reviewing changes in technology and changes in impacts associated with Covered Activities, and an adaptive management process that addresses changes in technologies and associated impacts.

Table II.3-15 summarizes the role of the MAMP in relation to other parts of the Plan. Collectively, these components are the DRECP conservation strategy.

Table II.3-15
Relationship of MAMP to Other Parts of the DRECP

DRECP Component	Volume, Section	Relationship of MAMP
Biological Goals and Objectives	Volume I, Section I.3.4.3, Identify Biological Goals and Objectives[1]	MAMP provides the framework for long-term monitoring of the overall achievement of BGOs (i.e., effectiveness monitoring)
Conservation and Management Actions	Volume II, Section II.3.1.2.5, Biological Conservation and Management Actions; II.3.2.3, BLM-Specific Conservation and Management Actions; Appendix L, BLM Worksheets	MAMP provides the framework for long-term monitoring of the progress of implementation of DRECP CMAs and other biological conservation actions (i.e., compliance monitoring, project-level monitoring, management action validation monitoring)
Plan implementation and governance	Volume II, Section II.3.1.5, Plan Implementation	Plan implementation describes the implementation structure, governance, cost, and funding related to the MAMP

Notes:
[1] For full text of the BGOs, see Appendix C.

The MAMP was developed according to the state and federal guidelines and policies related to monitoring and adaptive management, as described in Section II.3.1.3.2. Key reference documents for development of the MAMP included *Adaptive Management, The U.S. Department of the Interior Technical Guide* (Williams et al. 2009) and *Adaptive Management, The U.S. Department of the Interior Applications Guide* (Williams and Brown 2012), and *Designing Monitoring Programs in an Adaptive Management Context for Regional Multiple Species Conservation Plans* (Atkinson et al. 2004). Additionally, the *Recommendations of the DRECP Independent Science Advisors* (2010), the *Recommendations of the DRECP Independent Science Panel* (2012), and other relevant publications and guidance on monitoring and adaptive management were used in the development of the MAMP, as cited herein.

II.3.1.3.2 State and Federal Guidelines and Policies Related to Monitoring and Adaptive Management

This section summarizes the state and federal regulations and policies that address the role of monitoring and adaptive management in the DRECP. The DRECP MAMP provides the framework for monitoring and adaptive management for the BLM LUPA, for the CDFW NCCP, and for the USFWS GCP and Eagle Act programmatic take permits.

II.3.1.3.2.1 BLM Land Use Plan Amendment

The regulations in 43 Code of Federal Regulations (CFR) 1610.4-9 require that land use plans establish intervals and standards for monitoring and evaluation based on the sensitivity of the resource decisions, with additional specificity in the BLM Land Use Planning Handbook (H-1601-1), Chapter V (BLM 2005). Land use plan monitoring includes both implementation monitoring (also called compliance monitoring in this section) and effectiveness monitoring. In addition to monitoring, the BLM must periodically evaluate the land use plan and periodic plan monitoring reports to determine whether the land use plan decisions and NEPA analysis are still valid and whether the land use plan is being implemented. NEPA requires mitigation monitoring in 40 CFR 1505.2(c), with additional specificity provided in the BLM NEPA Handbook (H-1790-1), Chapter 10 (BLM 2008a).

Implementation monitoring is the process of tracking and documenting the implementation, or the progress toward implementation, of land use plan decisions. Effectiveness monitoring is the process of collecting data and information as the plan is being implemented in order to determine whether or not desired outcomes are being met or whether progress is being made toward meeting them.

Project-Level Monitoring

BLM requires that holders of ROW grants fund monitoring associated with those grants (43 CFR 2805.16-17). For large-scale development, this is done through preparation and funding of an Environmental and Construction Compliance Monitoring Plan (ECCMP) to ensure compliance with BLM terms, conditions, and stipulations in the ROW grants, the Plan of Development, and required mitigation as provided for in the ROD.

The purpose of the ECCMP is to provide an on-the-ground approach to compliance during project development designed to facilitate successful implementation. This includes the following requirements:

- Required mitigation approved in the RODs, designed to minimize undue and unnecessary degradation to public lands, and offset impacts to the human, environmental, and cultural environment
- Implementation plans based on mitigation requirements
- Terms, conditions, and stipulations in the ROW grant
- Conditions in Notices to Proceed
- Approved methods and construction plans contained in the Plan of Development, which mirror the action approved in the ROD

BLM Assessment, Inventory, and Monitoring Strategy

The BLM Assessment, Inventory, and Monitoring (AIM) Strategy was initiated, in part, to evaluate current monitoring activities and recommend procedures to improve the efficiency and effectiveness of these activities. The AIM Strategy provides guidance on collecting monitoring data that are essential for, and effective in, informing defendable land management (Toevs et al. 2011).

To effectively manage renewable resources, the BLM needs information at multiple scales about resource extent, condition and trend, stressors, and the location and nature of authorized uses, disturbances, and projects. Acquiring and assessing this information would be accomplished through integrating several fundamental processes (i.e., the integrated approach), including: (1) development and application of a consistent set of ecosystem indicators and methods for measuring them (i.e., core quantitative indicators and consistent methods for monitoring); (2) development and implementation of a statistically valid sampling framework; (3) application and integration of remote sensing technologies; and (4) implementation of related data acquisition and management plans (Toevs et al. 2011).

The BLM is using the AIM Strategy as the basis for developing the Riverside East Solar Energy Zone (SEZ) Long-Term Monitoring and Adaptive Management Pilot Project (Toevs et al. 2011; BLM 2014). The pilot project will serve as a comprehensive, but cost-effective, monitoring strategy to better understand the long-term, landscape-level impacts of solar energy development on BLM lands, and will inform development of similar monitoring strategies in other SEZs and in the DFAs. The following elements of a framework monitoring and adaptive management plan were developed for the pilot project using the AIM strategy:

- Frame the issue
- Understand the system
- Develop objectives
- Assemble background and existing information
- Develop monitoring and sampling schema
- Create/finalize monitoring plan
- Implement data collection and management
- Analysis and reporting
- Adaptive management loop

These concepts were integrated with CDFW and USFWS guidance for monitoring and adaptive management (see Sections III.3.1.3.2.2 and III.3.1.3.2.3) in developing the DRECP MAMP.

Department of the Interior Adaptive Management Implementation Policy

DOI Departmental Manual 522 DM 1, Adaptive Management, provides policy guidance for DOI bureaus and offices to incorporate adaptive management strategies into their land and resource management decisions (DOI 2008). The DOI's policy is to encourage the use of adaptive management, as appropriate, as a tool in managing lands and resources.

II.3.1.3.2.2 CDFW Natural Community Conservation Plan

The Natural Community Conservation and Planning Act (NCCPA) (California Fish and Game Code, Section 2800 et seq.) requires that for the CDFW to approve an NCCP it must fully integrate an adaptive management strategy that provides for periodic evaluation and modification. Sections 2820 (7) and (8) require that an NCCP must include a monitoring program and an adaptive management program, and must include terms and conditions requiring the implementation of these programs.

The NCCPA (California Fish and Game Code, Section 2805) defines a monitoring program as "a program within an approved NCCP that provides periodic evaluations of monitoring results to assess the adequacy of the mitigation and conservation strategies or activities and to provide information to direct the adaptive management program."

The NCCPA also describes a monitoring program as including surveys to determine status of biological resources, periodic take assessments, progress reporting, and a monitoring schedule.

In *Designing Monitoring Programs in an Adaptive Management Context for Regional Multiple Species Conservation Plans* developed by the U.S. Geological Survey (USGS) in partnership with CDFW and USFWS, Atkinson et al. (2004) provide guidelines for the stepwise development of a monitoring program. The approach includes the following nine steps:

1. Identify the biological goals and objectives relevant to the monitoring program
2. Identify the scope of the program in terms of geography, land ownership, information users, spatial scale, time scale, and available resources
3. Compile information
4. Group resources and set priorities
5. Develop conceptual models
6. Identify recommended monitoring and uncertainties
7. Develop monitoring implementation approach
8. Develop approach to quality assurance, data management and analysis, and reporting
9. Ensure effective feedback into decision making for adaptive management

The concepts of this stepwise approach were integrated with BLM and USFWS guidance for monitoring and adaptive management (see Sections III.3.1.3.2.1 and III.3.1.3.2.3) in developing the DRECP MAMP.

II.3.1.3.2.3 USFWS General Conservation Plan

Adaptive Management

The interagency DRECP, of which the USFWS's proposed GCP is an integral part, is a prime example of the USFWS's Strategic Habitat Conservation (SHC) initiative (USFWS 2008; USGS 2006). The DRECP would demonstrate SHC "on the ground" as a science-driven, collaborative approach to landscape-level conservation. The DRECP employs SHC principles for shared conservation targets, biological goals and objectives, and a monitoring and adaptive management program to identify the information, decisions, delivery, and

monitoring needed to achieve desired biological outcomes. The basic components of SHC as it relates to the DRECP are (1) biological planning to select appropriate surrogate species to represent a broader array of biological outcomes, including species such as desert tortoise and unlisted species such as desert bighorn sheep, Mohave ground squirrel, and golden eagle; (2) conservation design that combines geospatial data with biological information to create maps and models evaluating potential conservation areas and low-biological conflict DFAs, and to support collaborative decisions about where reserve acquisitions and management actions are needed; (3) conservation delivery using the products of conservation design to adjust and target assembly and management of the DRECP reserve system; and (4) outcome-based monitoring and assumption-driven research to improve conservation management over time through the MAMP. The USFWS is committed to SHC as the most effective process for ensuring protection and conservation of natural resources while facilitating renewable energy development, and adaptive conservation strategies are a major emphasis of SHC.

Adaptive management is one of the five concepts of the USFWS "Five-Point Policy" (65 FR 35242). The Five-Point Policy supplements the Handbook for Habitat Conservation Planning and Incidental Take Permitting Process (HCP Handbook; 61 FR 63854) and the "No Surprises" final rule (50 CFR 17.22[b][5] and 17.32[b][5]), and is applied within the context of the existing ESA statute and regulations. The Five-Point Policy is considered agency policy, and the USFWS is fully committed to implementing it in the national Habitat Conservation Plan (HCP) program under Section 10(a)(1)(B) of the ESA. The DOI also has published technical guidance for designing and applying adaptive management in DOI programs (Williams et al. 2009; Williams and Brown 2012).

Adaptive management has traditionally been viewed and designed for large-scale systems as an integrated method for addressing uncertainty (Holling 1978; Walters 1986; Gundersen 1999). The USFWS Five-Point Policy defines adaptive management broadly as a method for examining alternative strategies for meeting measurable biological goals and objectives and then, if necessary, adjusting future conservation actions according to what is learned. Accordingly, the USFWS is considering adaptive management as a strategy to address uncertainty in the conservation of species covered by the proposed GCP.

The Five-Point Policy requires that an approved HCP, or GCP in the case of the DRECP, must outline the agreed-upon future changes to the conservation strategy for species covered by an incidental take permit. An adaptive management strategy is essential for the GCP because of the uncertain nature of potential significant risks to many of the Covered Species when the permit is issued and Covered Activities for renewable energy development are implemented. Uncertainty in the potential risks of the Covered Activities stem from critical information gaps, such as lack of specific information about a species'

ecology or habitat, uncertainty in the effectiveness of habitat or species management techniques, or lack of knowledge on the degree of potential effects of Covered Activities on Covered Species.

According to the Five-Point Policy, an adaptive management strategy should (1) identify sources of uncertainty and the questions that need to be addressed to resolve the uncertainty; (2) develop and implement alternative strategies, including experimental strategies, as appropriate; (3) integrate a monitoring program to obtain the necessary information for determining whether the adaptive management alternatives are making progress toward achieving the biological goals and objectives of the conservation strategy; and (4) incorporate feedback loops that link implementation and monitoring to a decision-making process that results in appropriate changes in management.

The use of adaptive management strategies is compatible with No Surprises assurances. These assurances apply once all appropriate HCP provisions have been mutually crafted and agreed upon, and approved by USFWS and the applicant; or in the case of the DRECP, once GCP provisions have been approved by USFWS and permit terms and conditions proposed under the GCP have been mutually agreed upon by USFWS and the applicant. Adaptive management strategies are part of those provisions, and implementation of the identified adaptive management strategies are part of a properly implemented conservation plan. When a HCP (or GCP) and permit incorporate an adaptive management strategy, those documents should clearly state the known range of possible conservation adjustments that would be implemented due to significant new information, risk, or uncertainty. That range would define the limits of the financial commitments required of permittees, and would enable applicants to assess the potential economic impacts of adaptive management responses before agreeing to the terms and conditions of the GCP. For the GCP, an adaptive management strategy is integral for guiding permittee responses to "changed circumstances," which must be distinguished from "Unforeseen Circumstances" under No Surprises. A process for responding to changed circumstances is described in Section II.3.1.7.3.

As described in the USFWS's Five-Point Policy, two types of adaptive management are appropriate to consider when developing a strategy to address uncertainty: "passive" adaptation is where information obtained is used to determine a single best course of action; "active" adaptation is developing and testing a range of alternative strategies (Walters and Holling 1990). However, one constraint that may inhibit experimental design for active adaptive management is the possible risk to species associated with using an untested experimental design. Where an active, experimental approach may pose too much of a risk to Covered Species, a more passive approach may be the best course of action under the MAMP. The MAMP would develop adaptive management strategies that would facilitate and improve the decision-making process as permittees implement the terms and

conditions of their incidental take permits under the GCP, and as the DRECP Coordination Group oversees the assembly, monitoring, and management of the reserve system.

According to the Five-Point Policy, the proposed GCP outlines the agreed-upon future changes that permittees would be required to implement to adjust management of avoidance, minimization, and mitigation measures at project sites, including responses to Changed Circumstance, and that the DRECP Coordination Group and Adaptive Management Team would implement in the reserve system (including responses to changed circumstances on permittee mitigation lands). Not all species covered in an incidental take permit need an adaptive management strategy. However, an adaptive management strategy is essential for permitted Covered Activities that would otherwise pose a significant risk to the species at the time the permit is issued due to significant data or information gaps. Possible significant data gaps that may require an adaptive management strategy include, but are not limited to, a significant lack of specific information about the ecology of the species or its habitat (such as food preferences, relative importance of predators, territory size), uncertainty in the effectiveness of habitat or species management techniques, or lack of knowledge on the degree of potential effects of the activity on the species covered in the incidental take permit. A practical adaptive management strategy also includes milestones that are reviewed at scheduled intervals during the life of the incidental take permit.

The USFWS Eagle Act permitting regulations and Eagle Conservation Plan Guidance provides the framework for incorporating adaptive management into take permits for eagles where take is anticipated to be ongoing during the term of the permit. Implementation of advanced conservation practices to reduce impacts associated with ongoing take is an important component to ensure conservation of golden eagles.

Monitoring

The Five-Point Policy also provides guidance for monitoring required as a mandatory element of all HCPs, including the GCP (50 CFR 17.22, 17.32, and 222.307). HCP (and GCP) monitoring includes both compliance monitoring and effectiveness monitoring. Compliance monitoring refers to verifying that a permittee is carrying out the terms and conditions of the incidental take permit, and ensuring that incidental take of Covered Species does not exceed the level authorized by the permit. Effectiveness monitoring evaluates the impacts of the permitted activities and determines whether the effectiveness of the conservation plan is consistent with the assumptions and predictions made when the plan components were developed and approved, including the plan's biological goals and objectives. The Five-Point Policy's term "effectiveness monitoring" is the same concept as "validation monitoring" commonly used in the scientific literature. For the GCP, effectiveness monitoring would be directed toward determining whether the permit issued under the

GCP is contributing toward achieving the BGOs. Integrating the GCP monitoring program into the DRECP MAMP therefore is crucial to guide any necessary changes in management for renewable energy development permitted under the GCP.

Monitoring is discussed in detail in Section II.3.1.3.4. Briefly, monitoring under the GCP would reflect the measurable biological goals and objectives. Monitoring would be based on sound science and standard surveys described in the scientific literature or other previously established monitoring protocols (e.g., agency approved survey protocols). As appropriate, community-level or multiple species approaches (such as those contained in Plan-wide, landscape-level, and community-level CMAs) would be used. The following components are essential for compliance and effectiveness monitoring under the GCP: (1) assessing implementation and effectiveness of permit terms and conditions (e.g., financial responsibilities and obligations, management responsibilities); (2) determining the level of incidental take of Covered Species; (3) determining the biological conditions resulting from implementation of the permit's Covered Activities and conservation plan (e.g., change in species status or habitat conditions); and (4) providing the information needed to implement the DRECP's adaptive management strategy. In addition, an effective monitoring program must be flexible enough to allow modifications, if necessary, to obtain the appropriate information, but at the same time must provide comparable information over both space and time so that large–scale spatial patterns and temporal trends (e.g., population changes) can be detected. Comprehensive monitoring programs for regional, multispecies plans like the DRECP also should include projected milestones, timelines, and/or trigger points or thresholds for evaluating and adjusting to change.

The USFWS Eagle Act permitting regulations and Eagle Conservation Plan Guidance include information regarding the need to monitor impacts of projects to golden eagles and provide feedback as to the effectiveness of advanced conservation practices that have been implemented to minimize impacts to golden eagles.

Both the USFWS and permittees under the GCP would be responsible for monitoring implementation of permit terms and conditions. Compliance monitoring would be the primary responsibility of the USFWS, but would require coordination with and input from the permittees. Permittee assistance with compliance monitoring would include monitoring implementation of Covered Activities and reporting results to USFWS. Permittees, with the assistance of USFWS, would be responsible for verifying the effects and effectiveness of conservation actions permitted under the GCP. The USFWS would require periodic reports of all permittees, as provided under the authority of incidental take permit regulations at 50 CFR 13.45 and 222.301.

II.3.1.3.3 DRECP Adaptive Management Team

A strong institutional structure with the authority to implement the MAMP is an essential component of effective adaptive management.

A full description of the DRECP implementation structure is provided in Section II.3.1.5.2. Briefly, the DRECP Coordination Group would oversee implementation the MAMP based on the advice and recommendations of an Adaptive Management Team. The Adaptive Management Team would have primary responsibility for implementing the MAMP, including developing MAMP scientifically based monitoring protocols and standards and for reviewing and analyzing MAMP monitoring data and reports, including effectiveness monitoring (including validation) monitoring (see Section II.3.1.3.4). The Adaptive Management Team would also review and analyze relevant new scientific information regarding Covered Species and covered natural communities, such as new species data, new vegetation mapping, and other new pertinent scientific research (e.g., surveys methods, analytic methods, etc.). Based on monitoring data and reports, and other new scientific information, the Adaptive Management Team would advise the Coordination Group regarding implementation of the MAMP, including, but not limited to, developing and recommending appropriate adaptive management actions. The Adaptive Management Team would also advise the Coordination Group when and for what purpose independent scientific review or study would be most useful for implementing the MAMP.

The Adaptive Management Team may assist with, but would not be responsible for, compliance monitoring or project monitoring (see Section II.3.1.3.4.1 and II.3.1.3.4.3). Such assistance would primarily occur in the context of effectiveness monitoring and ensuring that progress is being made toward achieving the BGOs (e.g., compliance or project monitoring of wetland avoidance measures and effects on Covered Species and/or their habitats). Compliance monitoring and project monitoring would be carried out by each permittee or ROW holder in accordance with the terms and conditions of its permit(s) or ROW grant. The Adaptive Management Team may also assist with land use plan monitoring as it relates to effectiveness monitoring (see Section II.3.1.3.4.4), but BLM would retain primary responsibility for monitoring implementation of its land use plans.

II.3.1.3.3.1 Adaptive Management Team Membership

The Coordination Group's Program Manager would chair the Adaptive Management Team. The Adaptive Management Team members would include representatives from CDFW, USFWS, BLM, CEC, California State Lands Commission (CSLC), USGS, the National Park Service and California Department of Parks and Recreation. When it would supplement the expertise or experience reflected in the Adaptive Management Team, the Coordination Group may also invite representatives of other public agencies and private organizations as

members. All members of the Adaptive Management Team would have expertise in biology or other relevant fields of science.

II.3.1.3.3.2 Adaptive Management Team Operation

The Adaptive Management Team may invite individuals or convene subteams consisting of individuals who are not members of the Team to provide input into specific MAMP implementation issues. These individuals or subteams may be from the technical staffs of Adaptive Management Team members or other entities or institutions, as deemed appropriate by the Team. The Adaptive Management Team would also ensure that the Science Subgroup of the Stakeholder Working Group would be afforded sufficient opportunity to provide input into issues the Team is considering.

The Program Manager may request that the Adaptive Management Team provide scientific review of specific technical issues related to implementation of the MAMP or implementation of the DRECP conservation strategy, regardless of whether such review is specifically required by the MAMP. The Stakeholder Working Group also may recommend to the Program Manager areas they believe need additional scientific review. At least once every 5 years, the Adaptive Management Team would also assess the overall efficacy of the MAMP and advise the Coordination Group regarding whether revisions to the MAMP would improve its effectiveness.

II.3.1.3.3.3 Program Management

Based on the advice and recommendations of the Adaptive Management Team, consideration of available resources, and guidance from the DRECP Executive Policy Group, the DRECP Coordination Group would manage and implement the MAMP. Management and implementation would include, among other tasks:

- Developing DRECP long-range monitoring and management plans for defined ecoregion subunits within the reserve system.
- Developing annual work plans that tier from the long-range monitoring and management plans.
- Defining responsibilities for coordinated monitoring and management actions.
- Reporting on effectiveness monitoring as described in Section II.3.1.3.4.2.
- Making relevant monitoring data and reports and other relevant scientific information available to the public through the DRECP data portal and other means as determined appropriate.

- Disseminating information (i.e., annual reports from permittees) from the permitting agencies regarding the status of the DRECP and its components: BLM LUPA, NCCP, GCP, and permits issued under the GCP.
- Conducting a comprehensive review of the DRECP MAMP at least every 5 years in cooperation with the Stakeholder Working Group.

II.3.1.3.4 Monitoring

The monitoring requirements of the MAMP would include compliance monitoring, effectiveness monitoring (sometimes referred to as "performance monitoring"), project-level monitoring, land use plan monitoring, and validation monitoring.

Compliance monitoring tracks the status of DRECP implementation and refers primarily to administrative duties related to verifying that the permittees are carrying out the terms of the DRECP. Compliance monitoring information typically includes a summary of dates of completion, revisions, and implementation progress of the DRECP. The compliance monitoring framework for the DRECP is described in Section II.3.1.3.4.1.

Effectiveness monitoring assesses the status of ecological, natural communities, and Covered Species conditions in the reserve and other portions of the Plan Area where conservation actions are implemented over time and evaluates whether the conservation actions are contributing to meeting the BGOs. Section II.3.1.3.4.2 describes the effectiveness monitoring framework and effectiveness monitoring phasing for the DRECP MAMP.

Project-level Monitoring refers to monitoring that occurs in association with individual projects to ensure compliance with permit terms and conditions. For projects on non-BLM lands, project-level monitoring would be the responsibility of the permittee or third party with take authorization to document compliance sufficient to satisfy the requirements of the NCCP and GCP. For projects on BLM-administered lands, BLM would require holders of ROW grants to prepare and fund an ECCMP to ensure compliance with the BLM terms, conditions, and stipulations in the ROW grants, the Plan of Development, and required mitigation as provided for in the ROD (43 CFR 2805.16-17). Section II.3.1.3.4.3 describes the required project-level monitoring.

With respect to the BLM LUPA, *land use plan monitoring* is a consideration. NEPA requires mitigation monitoring in 40 CFR 1505.2(c), with additional specificity provided in the BLM NEPA Handbook (H-1790-1), Chapter 10 (BLM 2008a). The regulations in 43 CFR 1610.4-9 require that land use plans establish intervals and standards for monitoring, based on the sensitivity of the resource decisions. Land use plan monitoring includes both implementation and effectiveness, as described in Section II.3.1.3.4.4.

Validation monitoring assesses the validity of management actions (including the techniques or technologies employed) to sufficiently accomplish the objectives originally conceived, as described in Section II.3.1.3.4.5. In practice, validation monitoring is often combined with effectiveness monitoring.

II.3.1.3.4.1 Compliance Monitoring

Compliance monitoring would be used to track the status of DRECP implementation with regard to administrative duties of each the agencies in the DRECP Coordination Group and to verify that the Plan permittees are carrying out the terms and conditions of the DRECP contained in the Plan, and permits issued under the NCCP and GCP. The DRECP Coordination Group, through their respective agency responsibilities relative to project permit conditions, would be responsible for monitoring the Plan permittees' activities and ensuring that Plan permittees provide the information to the DRECP Coordination Group needed to conduct adequate compliance monitoring for the entire DRECP.

Information to support compliance monitoring would be reported annually by the DRECP Coordination Group and would include documentation of:

- Summary of all Covered Activities conducted the previous year including, but not limited to:
  - Project description summary, including type of project, types of environmental impacts (i.e., natural communities, Covered Species, modeled habitats), compliance monitoring contractor, and avoidance, minimization, and mitigation measures implemented during the project
  - Total impacts to Covered Species and/or their modeled habitat as a result of Covered Activities in the previous year
  - Total impacts to nonbiological resources as required by the project permitting agency
  - Total impacts to Covered Species and/or their modeled habitat as a result of Covered Activities to date since commencement of the DRECP (e.g., the effective date)
- Summary of avoidance and minimization measures implemented in relation to Covered Activities in the previous year, including:
  - Implementation of environmental compliance monitoring programs
  - Implementation of environmental training for compliance monitors and contractor education

  - Results of compliance monitoring programs, including successes and problems or issues in implementing avoidance and minimization measures
  - Variances to authorized Covered Activities granted during compliance monitoring
  - Description of compliance contractors
- Conservation actions initiated, continued, or completed in the previous year, including habitat additions to the reserve system and management actions
- Conservation actions initiated, continued, or completed to date since commencement of the DRECP (e.g., the effective date)
- Conservation actions planned to be initiated, continued, or completed the next 5 years.
- A running tabulation of habitat created, restored, protected, or enhanced under the Plan during the previous year and to date since commencement of the DRECP (e.g., the effective date)
- Description of all findings, conclusions, and results of effectiveness monitoring, research, or conservation actions previously undertaken, including an evaluation of any significant issues encountered during effectiveness monitoring
- Summary of significant communications and interactions among DRECP participants, including the Coordination Group, Adaptive Management Team, Stakeholder Working Group, Partners Working Group, permitting agencies, other state, federal, or local agencies, scientists and other interested parties during the previous year, including formally scheduled meetings, significant issues related to DRECP implementation and/or Covered Activities, conflicts, and resolution of conflicts
- Description of any enforcement actions taken by the permitting agency(ies) during the previous year
- Description of expenditures of funds to implement the DRECP during the previous year
- Description of expenditures of funds to implement the DRECP to date since commencement of the DRECP (e.g., the effective date)
- Description of any activities to secure funding for conservation actions (e.g., grant applications) during the previous year
- Description of any DRECP modifications or amendments proposed or approved during the previous year
- Description of any clerical corrections or errata made to the DRECP during the previous year

The permitting agencies would work with the Coordination Group to ensure compliance with the conservation actions in the DRECP and the terms and conditions of the permits issued under the GCP and NCCP.

II.3.1.3.4.2 Effectiveness Monitoring

Effectiveness monitoring is critical to informing the adaptive management of biological resources and evaluating the overall effectiveness of the DRECP conservation strategy. The effectiveness monitoring component of the DRECP MAMP described in this section was developed together with the adaptive management framework described in Section II.3.1.3.5 and by integrating key guidance on developing monitoring programs, as summarized in Section II.3.1.3.2. Table II.3-16 outlines the elements of the DRECP effectiveness monitoring framework and the phases when these elements would be developed and implemented.

Table II.3-16
Effectiveness Monitoring Framework Elements and Phasing

Effectiveness Monitoring Framework Elements[1]	Phase[2]
Biological Goals and Objectives (BGOs). Effectiveness monitoring would be used to evaluate the specific stated goals and/or objectives for the ecological processes, natural communities, and Covered Species. The effectiveness monitoring component of the DRECP MAMP would be designed to assess achievement of the Step-Down Objectives (DRECP NCCP Objectives) and the contribution of Plan implementation to achieving the Plan-wide BGOs.	Plan development phase; draft BGOs provided in Appendix C.
Scope of the Effectiveness Monitoring. The scope of the effectiveness monitoring effort in terms of geography, land ownership, responsible entity, use of monitoring information, spatial scale, temporal scale, and available resources.	Plan development phase (initial framework of the monitoring scope is described in Section II.3.1.3.4.2); scope refinement would occur during the early Plan implementation phase.
Existing Information Assembly, Synthesis, and Prioritization. The best available information, as compiled for use in developing the DRECP, and as developed during Plan implementation, for ecological processes, natural communities, and Covered Species would be synthesized to set monitoring priorities. The information synthesis process would include grouping resources for monitoring efficiencies and development of management-oriented conceptual models to depict important stressors, threats, and uncertainties and potentially make management outcome predictions. Other tools or models (e.g., intactness modeling, conservation values modeling) may also be developed during this phase in order to set monitoring priorities.	Plan development and early plan implementation phases; Baseline Biology Report (Appendix Q) and the biological resources environmental setting (Chapter III.7); synthesis and prioritization would primarily occur in the early Plan implementation phase.

Table II.3-16
Effectiveness Monitoring Framework Elements and Phasing

Effectiveness Monitoring Framework Elements[1]	Phase[2]
Recommended Monitoring and Monitoring Approaches. Recommendations on what and how response variables would be monitored and how the response variables would be used to assess effectiveness (e.g., monitoring interests such as population trends or habitat quality). Monitoring protocols, techniques, locations, and frequencies would be specified.	Early Plan implementation phase; initial monitoring approach considerations for the Covered Species is provided in Table II.3-17.
Monitoring Implementation Strategy. Logistics for implementing the effectiveness monitoring would be developed (e.g., staffing, equipment, schedules) and coordinated with cooperating federal, state, and local agencies and other entities.	Early Plan implementation phase.
Monitoring, Data Management and Analysis, and Reporting. Monitoring would be conducted and data would be analyzed, managed, and reported according to specifications developed in the early Plan implementation phase.	Early and long-term Plan implementation phases; initial framework for the data reporting described in Section II.3.1.3.4.2.
Inform Adaptive Management Decision-Making. Monitoring results would inform adaptive management throughout MAMP implementation as described in the Adaptive Management Framework (Section II.3.1.3.5).	Early and long-term Plan implementation phases.

[1] The effectiveness monitoring framework elements described here are based on the integration of the guidance from BLM (2014), Atkinson et al. (2004), and the Five-Point Policy. See Section II.3.1.3.2.

[2] The phase provided here is intended to frame when the primary development and implementation of the effectiveness monitoring elements for the DRECP would occur. The Plan development phase includes the period up until the DRECP is approved. The early Plan implementation phase is generally considered to be the first 5 years of Plan implementation. The long-term Plan implementation phase may begin upon Plan approval or may begin following the early Plan implementation phase, depending on the monitoring activity. As noted by Atkinson et al. (2004), effectiveness monitoring elements may be in different phases for different resources, and all elements may be revisited and refined throughout MAMP implementation.

Effectiveness Monitoring Framework

This section describes the framework for the effectiveness monitoring component of the DRECP MAMP, which would be developed and refined over several phases as shown in Table II.3-17.

Biological Goals and Objectives and Effectiveness Monitoring Scope

Effectiveness monitoring would be used to evaluate progress towards achieving the stated goals and objectives for the ecological processes, natural communities, and Covered Species. The effectiveness monitoring component of the DRECP MAMP would be specifically designed to assess achievement of the Step-Down Biological Objectives and the contribution of Plan implementation to progress towards achieving the Plan-wide BGOs. The DRECP BGOs are provided in Appendix C.

The scope of the DRECP effectiveness monitoring program takes into consideration geography, land ownership, responsible entity, use of monitoring information, spatial scale, temporal scale, and available resources. The following provides the draft framework for the scope of effectiveness monitoring under the DRECP MAMP:

- As described in Section II.3.1.3.3, the Adaptive Management Team would be responsible for implementing effectiveness monitoring and coordinating with other, ongoing federal, state, and local monitoring efforts within and adjacent to the Plan Area.
- Effectiveness monitoring would occur in BLM LUPA conservation designation lands, in lands added to the DRECP reserve system on non-BLM land, and other areas outside the reserve system where conservation actions are implemented.
- The effectiveness monitoring component of the MAMP would be implemented at several spatial scales to monitor landscape and ecological processes, natural communities, and Covered Species.
- Elements of the effectiveness monitoring program would be developed, refined, and implemented in several phases, as shown in Table II.3-17.

Existing Information Assembly, Synthesis, and Prioritization

The best available information, as compiled for use in developing the DRECP and as developed during Plan implementation, for landscape and ecological processes, natural communities, and Covered Species would be synthesized to set monitoring priorities. The information synthesis process would include grouping resources for monitoring efficiencies (e.g., riparian communities and associated covered riparian birds), and developing management-oriented conceptual models to understand relationships among important stressors, threats, and management uncertainties. Other tools or models (e.g., ecological processes models) may also be developed to set monitoring priorities.

As described in Williams and Brown (2012), monitoring serves the following purposes in an adaptive management framework: (1) evaluate progress toward achieving objectives; (2) determine resource status in order to identify appropriate management actions; (3) increase understanding of resources dynamics by comparing predictions with actual monitoring data; and (4) develop and refine models of resource dynamics. One of the most difficult aspects of developing effective monitoring in an adaptive management framework is implementing the action with a sound experimental design that can accomplish these purposes. As stated in DRECP ISA (2010), "Hypotheses about processes and interactions that characterize sustainable populations, as well as proximate and ultimate stressors that affect them, need to be identified." Management-oriented conceptual models, as described

in Section II.3.1.3.5.1, are used to help identify and define appropriate hypotheses for adaptive management and the proper response variables.

Management-oriented conceptual models and other modeling tools are critical for adaptive management as they provide the means to explore alternative management actions and test hypotheses and other assumptions. The models available during the Plan development stage include several existing management-oriented conceptual models relevant to the DRECP Covered Species, natural communities, and ecological processes, a terrestrial landscape intactness model, a conservation values model, and several climate change models. The Adaptive Management Team would use these tools and other models developed during Plan implementation as described in Section II.3.1.3.5.1.

By synthesizing the best available information and by utilizing modeling tools, the Adaptive Management Team would set monitoring priorities. The initial set of recommended monitoring was developed through the Plan development process and is provided below. The Adaptive Management Team would identify and recommend effectiveness monitoring priorities to the DRECP Coordination Group, as described above, during the early Plan implementation phase and periodically throughout the long-term Plan implementation phase.

Recommended Monitoring, Monitoring Approaches, and Implementation

As described above, within an adaptive management framework, prioritizing effectiveness monitoring would be an ongoing process throughout the duration of Plan implementation. Monitoring priorities may change over time for several reasons, including changes in resource status (e.g., increasing or decreasing endangerment of a Covered Species), refinements of management-oriented models (e.g., identifying a heretofore unknown variable relevant to species viability), and changes in stressor and threat levels or types (e.g., a new emerging disease or invasive species). Based on existing available information, initial effectiveness monitoring commitments identified during the Plan development phase include:

1. Landscape and Ecological Processes Effectiveness Monitoring: The effectiveness of the DRECP reserve design and implemented conservation actions would be evaluated as they relate to the following landscape and ecological process:
    a. Wildlife movement and habitat linkage function
    b. Aeolian transport
    c. Hydrologic processes

2. Natural Community Effectiveness Monitoring

    a. Long-term natural community change monitoring: To evaluate long-term changes in natural community structure and related habitat value for Covered Species, long-term change monitoring would be initiated in the early Plan implementation phase and would be conducted every 5 years for the duration of the Plan. This long-term natural community change monitoring would occur across the Plan Area in key geographic locations or ecoregion subareas, as prioritized during the initial Plan implementation phase. At the reserve system-scale, employing remote sensing technologies would allow for efficient and cost-effective monitoring by satellite or aerial imagery, possibly combined with LIDAR (Light Detection and Ranging). These technologies would provide information about general changes in vegetation community patterns, including distributional patterns of general communities (e.g., desert scrubs, grassland, riparian and woodland, etc.), as well as height, cover, and density. Such data may allow for development of automated change detection algorithms.

    b. Subject to available funding, completion of the alliance-level vegetation mapping of the Plan Area would be conducted to produce a seamless baseline natural community dataset.

    c. Long-term habitat restoration/enhancement effectiveness monitoring, including setting success criteria and contingencies for remediation of unsuccessful restoration/enhancement actions.

3. Covered Species Effectiveness Monitoring

    a. Desert tortoise range-wide population monitoring (implementation contribution to existing program)

    b. Mohave ground squirrel range-wide population monitoring (program establishment and implementation): Monitor known populations/suitable habitat at least once every 5 years to determine changes in distribution or status. Design monitoring to capture demographic data (probably on a more limited spatial scale, but on a more frequent temporal scale) and information on potential stressors that limit population growth.

    c. Mohave ground squirrel Data Gap Baseline Studies: Subject to available funding during the first 5 years of Plan Implementation, the DRECP Coordination Group will complete baseline studies of Mohave ground squirrels in identified data gap areas to determine presence or absence of population centers (see Appendix H).

        i. Known data gap areas within the Plan Area include:

1. South of Edwards Air Force Base from Saddleback Butte State Park east to the Los Angeles County line, and south to the California aqueduct.

ii. The baseline study will be conducted for the duration of the active season (from at least March 1 through July 31), unless a population center is positively identified prior to the end of the season.

iii. The baseline study will follow a fall/winter season of sufficient rainfall, which is at least 85 millimeters. Occupancy of a population center may not be considered negative after a year of drought (less than 85 millimeters of rainfall).

iv. If the DRECP Coordination Group concludes a population center occurs in a data gap area, the DRECP Coordination Group will map the suitable habitat area supporting the population center, contiguous suitable habitat surrounding the population center, and suitable habitat linkages to the other population centers. Any new Mohave ground squirrel Important Areas identified by the DRECP Coordinating Group will be subject to the same requirements as those applied to existing Mohave ground squirrel Important Areas in the DFAs.

d. Bird and bat Covered Species Plan-wide monitoring of operational effects and effectiveness of implemented avoidance, minimization, and compensation; implemented in conjunction with project applicant mortality monitoring and other required mitigation monitoring using standardized monitoring protocols that allow for application of consistent, reserve system-wide analytic methods.

e. Agriculture-dependent Covered Species monitoring: Monitor population trends and effectiveness monitoring for conservation actions for agriculture-dependent Covered Species, including burrowing owl, greater sandhill crane, mountain plover, and Swainson's hawk.

f. Plant Covered Species Plan-wide population monitoring

g. Common raven management Plan-wide monitoring: Monitoring of the effectiveness of raven management actions implemented Plan-wide (likely in conjunction with desert tortoise monitoring).

In the early Plan Implementation phase (within 5 year of Plan approval), the Adaptive Management Team would develop monitoring approaches (e.g., protocols, data collection standards) for these monitoring commitments and monitoring priorities identified in the future. Table II.3-17 provides a summary of potential response variables and monitoring approaches/considerations for the DRECP Covered Species, which would be used by the

Adaptive Management Team to develop monitoring approaches for recommended and prioritized monitoring efforts; however, the Adaptive Management Team would have the flexibility to design and implement a monitoring program that meets the Plan-wide BGOs and the DRECP Step-Down Biological Objectives, as necessary.

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
Amphibians and Reptiles			
Agassiz's desert tortoise	*Gopherus agassizii*	• Recruitment • Survival • Population growth • Density and abundance • Occupancy rates • Distribution (including relative distributions of live tortoises and carcasses that may indicate dieoff areas) • Habitat quality and quantity • Habitat loss • Habitat degradation • Individual tortoise body condition (e.g., size, evidence of disease) • Other threats (e.g., OHVs, non-native species, ravens, climate change effects, etc.)	U.S. Fish and Wildlife Service 2011; Tracy et al. 2004 • Population Monitoring ○ Conduct annual range-wide surveys using randomly selected line distance transects (e.g., Buckland et al. 2001; Anderson and Burnham 1996) ○ Stratify by Recovery Unit (e.g., Western Mojave, Eastern Mojave, Northern Colorado deserts) and by regions within Recovery Units ○ Density estimates (e.g., from number of tortoises per kilometer, including live tortoises and carcasses) ○ Other sign such as burrows and scat. ○ Proportion of adults and subadults (e.g., recruitment) ○ Occupancy estimates (e.g., MacKenzie et al. 2002, 2003) • Behavioral studies (e.g., post-hatch movement, juvenile dispersal, disease transmission, sex differences) • Habitat Monitoring ○ Remote sensing using aerial image data (e.g., general vegetation communities), slope, elevation, etc. to develop methods for change detection ○ Habitat modeling ○ On the ground assessments of habitat covariates during line distance transects ○ Threat assessments such as OHV damage, non-native species, wildfire, etc. along line distance transects or through remote sensing.
Flat-tailed horned lizard	*Phrynosoma mcallii*	• Sand field conditions • Vegetation conditions • Prey availability • Presence/absence	• Conduct habitat monitoring (based on Barrows and Allen 2009 and Allen et al. 2005) ○ Establish randomly or pseudo (stratified)-randomly selected monitoring belt transects in suitable habitat (e.g., 10 x 100 m in stabilized sand

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
		• Relative abundance • Occupancy rates • Human disturbances	fields and active dunes) ○ Stratification variable may include: active sand dunes, sand hummocks, ephemeral sand fields, and mesquite dunes • Conduct species presence/absence surveys ○ 6 surveys/plot during June/July (verified as adequate based on power analysis to detect plot differences when average difference was >1.7 lizards) ○ Tracks may be suitable for assessing presence and relative abundance to species and age class ○ Initiate surveys when sand temperature is ≥ 35° C and continue until high angle of sun reduces ability to detect /identify tracks ○ Record all fresh tracks in 10 x 100 m plot ○ Record individuals in 10 x 100 m plot • Record habitat covariates ○ Ant abundance using pit fall traps in April (peak activity period) (3 traps per 10 x 100 m plot) ○ Density of perennial shrubs measure for entire 10 x 100 m plot ○ Percent cover of annual plants using 1 m^2 quadrat at 12 sample sites in each plot ○ Sand compaction using penetrometer and sieve for grain distribution • Conduct population monitoring (e.g., survivorship) using mark/recapture on 2-ha study plots, each superimposed on 10 x 100 m plots. ○ Use beaded wire with unique color combinations ○ Conduct approximately 8 surveys/month during March-November period ○ Walk entire plot and record snout-vent length, reproductive status, and position in study plot using GPS.

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
			○ Applicable for focused surveys but probably too labor intensive for broad-scale monitoring • Conduct distance sampling ○ Used to estimate population sizes and/or densities Requires visual detections from a transect and large sample sizes (e.g., >50 individuals) so may be difficult to implement
Mojave fringe-toed lizard	*Uma scoparia*	• Sand movement • Dune habitat conditions • Human disturbances • Presence/absence • Relative abundance • Occupancy rates	• Conduct habitat monitoring (based on Allen et al. 2005 and Barrows 1997) ○ Establish belt transects (e.g., 10 x 1,000 m, but depends on size of habitat patch) along slope contour using random starting point ○ Measure vegetation cover along transect using point-intercept method or counting all perennial species in plot ○ Measure plant richness by recording all species in patch or using releve or quadrat sampling ○ Measure substrate conditions (i.e., compaction) using penetrometer and sieve for grain distribution • Conduct species presence/absence surveys ○ At least 6 presence/absence surveys May-June between 0900 and 1200 hrs at temperature range of 33-43° C unshaded at 1 cm above sand surface ○ Record both individuals and tracks (if identifiable to species tracks may be more reliable than detections of individuals) to develop relative abundance indices. ○ Consider use of PAO if applicable (MacKenzie et al. 2006) and minimum sampling requirements can be met ○ Consider conducting 6 September/October surveys on each plot to record young of the year • Conduct population monitoring using mark/recapture (see horned lizard)

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
			○ Limited to focused questions that could be done at smaller spatial scale due to intensive field effort. • Conduct distance sampling ○ Used to estimate population sizes and/or densities Requires visual detections from a transect and large sample sizes (e.g., >50 individuals) so may be difficult to implement
Tehachapi slender salamander	*Batrachoseps stebbinsi*	• Presence/absence • Relative abundance • Occupancy rates • Population size/density • Macro- and microhabitats • Threats (grazing, wild pigs)	• Conduct presence/absence monitoring ○ Rainy/damp periods (typically February-March) ○ Cover-controlled active sampling method (e.g., Lowe 2003; Lowe and Bolger 2002) ○ Time-constrained transects within randomly selected plots (e.g., McKenny et al. 2006) ○ Area constrained searches ○ Avoid destructive methods that permanently disturb refugia (rocks, logs, debris) ○ Repeated surveys throughout active period (establish reference sites if possible) (but see Smith and Petranka 2000 for discussion of single vs. repeated survey results). ○ Non-invasive mark-recapture (e.g., flourescent elastomer to assess population size and other variable such as movement) ○ Cover boards along transects or in plots? (e.g., Brooks 2001) • Demographic/behavioral studies (e.g., reproduction, survival, recruitment and population growth, home ranges, dispersal, etc.) • Habitat assessment and modeling (e.g., Bowles et al. 2006; Lowe and Bolger 2002) ○ Substrate characterization (e.g., rocks, woody debris, leaf litter) using visual or other methods (e.g., embeddedness of rocks)

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
			○ Hydrology and water chemistry (e.g., dissolved oxygen, conductivity, acidity, temperature) ○ Slope and aspect ○ Vegetation characteristics (woodland canopy, yucca, understory cover, etc.) ○ Other disturbances/threats (e.g., grazing, wild pig rooting, etc.)
Riparian birds			
Least Bell's vireo	*Vireo bellii pusillus*	• Presence/absence • Occupancy rates • Nesting pairs • Reproductive success • Nest parasitism • Native and non-native plants • Hydrology (surface and ground water) • Geomorphology (e.g., sediment transport and deposition) • Natural flood disturbance regimes • Human/cattle disturbances • Urban-related invasive animals/predators (Argentine ants, domestic and feral cats, and other mesopredators)	• Implement CRAM for evaluations of landscape setting, hydrology, geomorphology, plant communities, biotic structure, etc. • Conduct avian surveys at point locations approximately at least 200 m apart within riparian zones (or along point locations along edge of riparian patch were riparian area cannot be penetrated without damage). ○ Conduct 3-4 surveys (ideally 4, depending on budget) between late May and mid-July to ensure that distinction can be made between nesting and migrating populations ○ Conduct 15-minute point counts between sunrise and 0900, with counterbalancing of survey times at the sites over the set of surveys ○ Employ double observer method to increase and evaluate detection probability, where second observer surveys same site some fixed time later (e.g., 30 minutes) ○ Record all species observed (including non-target species) by sight or sound ○ Record distance to nearest meter from observer point to detected bird ○ Record incidental detections of target species between point counts and during reconnaissance visits, habitat assessments, etc. ○ Small numbers of detections may limit use of point counts for density or occupancy estimates, but presence/absence data will be valuable Consider arthropod sampling, including invasive ants such as Argentine ant and red imported fire ant, using pitfall trapping associated with point counts
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*		
Willow flycatcher (including southwestern)	*Empidonax traillii* (including *extimus*)		

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
		Rails	
California black rail	*Laterallus jamaicensis coturniculus*	• Presence/absence • Occupancy rates • Nesting pairs • Reproductive success • Daily and seasonal sub-surface and surface water levels and fluctuations • Invasive plants (tamarisk) • Urban-related predators (non-native rats, cats and red fox)	Conway 2011; also see website at http://www.cals.arizona.edu/research/azfwru/NationalMarshBird/ • Point counts at emergent marsh locations • Space points counts by > 400 m to avoid double-counts and pulling in birds with playback (unless smaller spacing is considered desirable for some reason); if within a grid, each cell should be at least 16 ha (400 m^2); a grid may also be randomly subsampled. • Sampling stratification may be required to ensure representative sampling of suitable habitats • 5-minute passive surveys followed by 1-minute surveys using vocalization broadcast; morning and/or evening surveys during vocalizing periods (e.g., 2-hours around sunrise and sunset) • Record distance only during 5-minute passive survey (birds may move toward broadcast vocalization, violating the assumptions for distance sampling analyses) • Play standardized vocalizations for rails (obtainable from Marsh Bird Survey Coordinator listed in Conway 2011) for 30" followed by 30" silence. • At least 3 survey passes during peak of breeding season, conducting at least one survey within each of three 15-day survey windows - survey timing should be calibrate to breeding phenology of surveys region; surveys should be conducted prior to young-of-the-year vocalizations to ensure data are for the adult breeding population • estimate detection probability and apply to density estimates or occupancy rates • measure habitat covariates at sample points
Yuma clapper rail	*Rallus longirostris yumanensis*	• Presence/absence • Occupancy rates • Nesting pairs • Reproductive success • Daily and seasonal sub-surface and surface water levels and fluctuations • Prey availability (crayfish) • Mesopredators (e.g., raccoon) • Contaminants (selenium)	

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
		Other Birds	
Bendire's thrasher	*Toxostoma bendirei*	• Presence/absence • Occupancy rates • Nesting pairs • Reproductive success • Human/cattle disturbances • Cowbird parasitism • Competition with curve-billed thrashers and northern mockingbirds	• Conduct baseline surveys in suitable habitat to understand general distribution in Plan Area within DRECP reserve system • Conduct pilot study to establish appropriate and repeatable survey protocol for species, including detection probability, survey time each visit, and number of required annual site visits for robust sampling program • Conduct distance surveys at randomly selected point locations within suitable desert scrub, as determined through baseline surveys, in March-July over a time frame adequate for detecting trends in response variable (e.g., population abundance/size, occupancy rate) • Measure habitat covariates at sample sites (e.g., presence of Joshua trees, other yuccas and thorny scrubs, disturbances such as OHVs, cattle grazing, wildfire)
Burrowing owl	*Athene cunicularia*	• Presence/absence • Occupancy rates • Nesting pairs • Reproductive success • Burrow site availability (e.g., ground squirrel burrows) • Foraging habitat suitability • Prey availability • Collision-related injury/mortality • Pesticide effects (loss of ground squirrel burrow, direct harm, loss of prey)	Manning 2009; Conway and Simon 2003; Conway et al. 2008. Manning (2009) methods: • Study-area-wide single pass census followed by stratified random sampling in grid cells (e.g., 3x3 km cells in Imperial Valley) • Single-stop car surveys and visual surveys along roadsides, dirt roads, and ROWs along irrigation canals, drains and ditches in known population centers • Morning survey (e.g., dawn to 10-11:30 am) or late afternoon survey (4 pm to dusk) • 3 survey passes • Record status (single, pair, adult, young) • Type of perch (e.g., burrow, bare ground, flying only, artificial structure, vegetation, etc.)

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
		• Urban-related predators (cats and dogs)	• Record habitat covariates such as number of available burrow, squirrel activity, presence of alfalfa in 4 preceding years (Manning 2009), existing uses at time of survey Conway and Simon (2003) • Compared point counts, walking line-transect, and driving surveys (points below are only for point counts, which was recommended method) • Survey known population centers (e.g., Imperial Valley, western Mojave, Palo Verde Valley) Call broadcast following passive survey (e.g., Conway and Simon 2003) • At least 3 surveys passes survey year during peak breeding season: laying/incubation period; early nestling period; and late nesting period • Point counts surveys at stations separated by at least 0.8 km (0.5 mile) to ensure independence of nest sites (i.e., two different sites not used by same individuals) • 6-minute point count survey (from outside car; e.g., compare to Manning 2009); tested both passive (silent) surveys and call broadcast surveys (3 minutes silent + 3 minutes call broadcast) • Each point count surveys conducted by three different observers spaced by 20-minute intervals (i.e., 3 replicates per surveys pass at each station) • All point counts surveys conducted between 0600 and 1115 • Distance from observer and whether owl at burrow recorded • Detection probability calculated for occupied nest site, not individuals • Notable conclusions o Overall recommendation is to use points counts (contrast with Manning 2009) o Walking line-transects not viable method for monitoringm o Points counts better in regard to number of owls detected per unit

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
			distance ○ Driving surveys better for number of owls per unit of survey time ○ Selection of point counts vs. driving surveys methods would depend on monitoring objective; i.e., focus on efficiency (driving) or maximizing counts (point counts) ○ Detection probability highest for point counts (0.64) because owls can be detected at farther distances compared to driving surveys (0.37 detection probability) – note these absolute detection probabilities cannot be generalized to other regions or observers ○ Call broadcast increased detections, but birds may habituate over time and stop responding (which can introduce error, especially for within-pass replicates) – consider using broadcast as a supplement to standardized passive surveys to maximize detections but use caution in any statistical analyses
California condor	*Gymnogyps californianus*	• Presence/absence as forager • Contaminants (lead contamination of food resources, ingestion of microtrash and other contaminants such as antifreeze) • Collisions and electrocutions (power lines, towers, and other tall structures) • Attractants (e.g., human activities)	• Periodic review of USFWS GPS dataset to understand spatial use of Plan Area • Mortality data for Plan Area • Data from project monitoring activities
Gila woodpecker	*Melanerpes uropygialis*	• Presence/absence • Occupancy rates	• Conduct baseline surveys in suitable habitat to understand general distribution in Plan Area within DRECP reserve system

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
		• Nesting pairs • Reproductive success • Riparian woodland habitat quality (old growth, uplands with large, columnar cacti) • Invasive plants (tamarisk) • Competition (loss of nesting cavities to starlings) • Wildfire effects	• Conduct pilot study to establish appropriate and repeatable survey protocol for species, including detection probability, survey time each visit, and number of required annual site visits for robust sampling program • Conduct distance surveys at randomly selected point locations within suitable desert scrub, as determined through baseline surveys, in March-July over a time frame adequate for detecting trends in response variable (e.g., population abundance/size, occupancy rate) • Measure habitat covariates at sample sites (e.g., presence of Joshua trees, other yuccas and thorny scrubs, disturbances such as wildfire and invasives such as tamarisk)
Golden eagle	*Aquila chrysaetos*	• Active nests/territories • Reproductive success • Migrants and floaters vs. nesting pairs • Human disturbances • Collisions/electrocutions • Contaminants (e.g., lead) • Wildfire effects on prey densities	Two main approaches – sampling-based density/population estimate (Nielson et al. 2010) and inventory (Pagel et al. 2010) • Estimated gold eagle numbers by aerial line transect surveys (fixed-wing aircraft) using mark-recapture procedures in months of August/September (after juveniles had fledged and birds began migration) • Goal was to detect 3% annual population decline over 20-year period with statistical power ≥0.8 with 90% confidence interval ($\alpha = 0.1$) • Surveys conducted from sunrise to 1300 hrs. • Estimated distance from transect line by (1) flying to perched birds from transect line and (2) flying to location where flying birds were first detecting and recording GPS coordinates • Observed birds assigned to age class – Adult, Unknown Adult (Adult or older Immature), Older Immature (Sub-adult), Juvenile, Unknown Immature (Juvenile or Older Immature), and Unknown • Applied "mark-recapture distance analysis" using line transect (distance) sample analysis methods (Buckland et al. 2001) combined with mark-

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
			recapture (provided by multiple observers) to account for <1.0 detection probability even at minimum distances (Borchers et al. 2006). (Note: standard program DISTANCE analysis was not used due to detection issues specific to using fixed wing aircraft; i.e., the detection functions are different compared to ground-based line transects where detection is considered to be 1.0 on the transect itself and progressively smaller at distances from the transect; therefore a nonparametric kernel-based method was used to determine the detection function). Pagel et al. 2010. • Inventory (baseline) surveys in suitable habitat that has not been adequately surveyed and areas with historical or recent occurrence information • Determine presence/absence of active nests/territories by conducting at least 2 complete aerial surveys within a single breeding season; or at least 2 ground observation surveys of at least 4 hrs duration and where all potential active and alternate nests can be visually observed (surveys <4hrs acceptable when observation is positive, behavior indicates eggs or young, or eagles are being disturbed) • 2 observation periods separated by at least 30 days, but flexible based on behavior of adults and age of observed young o 1st survey tied to local nesting dates and related to courtship when birds are conspicuous o Surveys conducted in morning hours, ideally around dawn or shortly after o See Pagel et al. (p. 12) for other appropriate survey conditions and cautions to avoid harm, harassment or mortality during surveys o Also see Pagel for aerial survey guidelines and precautions o Ground observation post (OP) for known territories established

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
			between 300 m and 1600 m. • Reproduction data ○ Eggs, dead or alive young, nest failure ○ Fledgling success – young at least 51 days of the age or known to have fledged from an observed nest.; can also be inferred (see Pagel et al. 2010, Nesting outcomes, p. 17) • Habitat covariate information may include height and type of nest site (e.g., type of rock, species of tree) and nest aspect, forage location, prey (if observed) • Other monitoring survey types ○ Winter surveys ○ Migration surveys
Greater sandhill crane	*Grus canadensis tabida*	• Presence/absence • Winter flock size • Roosting habitat hydrology • Agricultural management (e.g., crop types) • Collisions (powerlines, fences) • Human disturbance	Ivey et al. 2014. • Monitor occurrence as winter visitor at main wintering regions (Imperial Valley south of Salton Sea and along Colorado River) • Monitor both roosting (shallow wetlands) and nearby foraging sites (ag fields supporting alfalfa and milo • Use combination of roost counts, roadside surveys, and aerial surveys to estimate abundance and distribution • Roost counts ○ Biweekly counts at major roost sites throughout wintering period within 2 or 3 day period for each count ○ Conduct visual counts at roosts at sunset when birds are flying in or in early morning before birds leave roost • Aerial surveys of roost sites using stratified sampling of high and low density roost survey blocks to provide unbiased abundance estimate ○ Partition survey blocks into line transects and randomly sample a

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
			standard proportion of the each block (e.g., 10%) using fixed-wing aircraft ○ Calculate abundance separately for high and low density blocks • Roadside abundance surveys of foraging sites to distinguish the three subspecies (greaters, lessers, and Canadians) that may occur in Plan Area (note: reliable distinctions between greaters and Canadians are problematic due to latter's intermediate size) ○ Biweekly surveys during morning feeding periods (e.g., 0700-1000) from vehicles ○ Use ratio of greaters to lesser to calculate sub-specific abundances for each roost site based on the aerial roost counts
Mountain plover	*Charadrius montanus*	• Presence/absence • Winter flock size • Collisions (farm equipment) • Human disturbance • Pesticide uses	Reiter et al. 2012. Also see Guidance for Developing and Implementing Effective Shorebird Surveys http://www.whsrn.org/sites/default/files/file/Shorebird_Monitoring_Guidance_2009.pdf • Monitor occurrence as winter visitor at main wintering regions (e.g., Imperial Valley south of Salton Sea, lower Colorado River, Antelope Valley/western Mojave); determining the appropriate sample frame (i.e., study area) within each sampling region likely will require pilot studies with inventories entire sampling frame. • Monitor winter use from October-March; e.g., counts 3-6 times over winter period; the appropriate time period to address variance may require pilot testing • Sample suitable wintering habitat in alfalfa, fallow agricultural fields, bare and plowed fields, burned fields (e.g., wheat), and grazed Bermuda grass grassland ○ Consider stratifying habitat patches if abundance systematically vary in

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
			relation to habitat type ○ Each sample unit should be homogeneous cover type to extent feasible ○ If study areas are small, full sampling of all sites may be feasible (this will also depend on funding) • Need to account for likely high variability in winter use in assessing trends; address sample size (# of sites), size of habitat patches, as well as detectability and counting issues (a problem with larger flocks) • Determine sampling effort in large study areas needed to reliable detection of level of change as stated in monitoring objectives (e.g., 30-40% decline over 10 years) • Consider tradeoffs in concentrating surveys in areas high historical use (which reduces sampling variability) vs. more sampling of areas with less use (lower concentrations) to address range or habitat use area shifts (which may increase sampling variability); this tradeoff can be addressed by weighted stratified sampling approach with sampling focused on high concentration areas and more limited sample of lower concentration areas. Tradeoffs can be simulated using Generalized Random Tesselation Stratified sampling. • Sampling should be conducted from edge of sample patch to minimize disturbances • All birds in sample area visually detected should be counted; time limit probably not required other than for budgeting purposes • Truncation distance of about 200 meters to account for decline in detection probability (but this should be pilot tested) • Optimum time of day for surveys and other factors in variability (e.g., inter-observer variability) may need pilot testing; local experts should be consulted regarding time of day and other conditions that may affect detections such as temperature and wind conditions.

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
			• See Reiter et al. 2012 for analytic methods and ways to address detection probabilities (which is a significant problem in estimating shorebird flock sizes), such as the "unreconciled double-observer method" described by Riddle et al. (2010)
Swainson's hawk	*Buteo swainsoni*	• Presence/absence • Nesting pairs • Reproductive success • Insecticide/pesticide effects (direct harm, loss of prey)	CDFG 2007; CEC and CDFG 2010 • Monitor breeding pairs/nesting status in Plan Area, primarily in Antelope Valley/western Mojave consistent with CDFW's goal to monitor long-term trends in breeding pairs and habitat changes in California • Implement sampling method and survey protocol to detect trends in Plan Area and contribute to statewide database • Determine breeding pairs/ square mile in Plan Area within defined nesting areas • Plan area represents "Sparse" nesting region, defined as average density of > one breeding pair per 76+ sq mi (CDFG 2007) • Conduct surveys in sample units of 1 square miles as needed (i.e., one or more times within nesting phases – see below) to generate confident count of nesting pairs in sample unit OR do complete census counts in important areas such as the Antelope Valley ○ Survey from vehicles whenever possible to avoid flushing to identify nest territory; max 5 mph speed with frequent stops ○ Walking surveys can be used to approach active nest once nesting territory is confirmed to record additional data such as tree species and height, nest height, etc.; walking to identify territories should only be done when driving is not feasible ○ Observations should be from 50-200 meters from potential nest locations and from several angles, with closer inspection nesting territory is confirmed ○ Surveys during nesting phases (suitable survey time of day)

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
			▪ April 1-31 (arrival, nest building) – birds active but nesting may not be confirmed in this phase without extensive survey time; (all daylight hours) ▪ May 1-30 (egg laying, incubation) – detection may be difficult in this phase; (all daylight hours) ▪ June 1-July 15 (fledging) – young active and visible; (sunrise to 1200 hrs; 1600 hrs to sunset) • Record habitat characteristics ○ Height of nests and nest trees ○ Species of nest tree or description of other nesting substrate ○ Number/density of other trees in nest proximity ○ Evaluate potential foraging habitat within 5-mile radius of active nest sites • Record behavior and nest status ○ Vocalizations (territorial displays, courtship, mating, feeding, threats) ○ Perching, displays, flights to/from nest ○ Feeding ○ Nestlings and fledglings ○ Presence of other raptors that may be nest site and prey competitors • Monitor mortality/injury from wind projects
Tricolored blackbird	*Agelaius tricolor*	• Presence/absence • Nesting pairs • Nesting colony size • Reproductive success • Mesopredators • Poisons and contaminants • Human activities (recreation,	See the Tricolored Blackbird Portal: http://tricolor.ice.ucdavis.edu/node/4874 • Monitor nesting colonies in Plan Area in coordination with the Triennial Statewide Survey • Surveys typically mid- to late-April • Documents presence/absence and provides colony size numbers and distribution

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
		agricultural operations)	• Surveys conducted from 50-100 meters from nest colony • Survey time not standardized but should be sufficient to conclude absence of birds are not present (detection may be more difficult during incubation periods); usually at least 15 minutes • Absolute counts of small colonies (<500 birds) and estimates for large colonies • See Protocol on Portal for scanning methods: http://tricolor.ice.ucdavis.edu/content/tricolored-blackbird-statewide-survey-protocol • Record sex ratio • Record colony site habitat characteristic, including historical but abandoned colonies ○ Nest substrate (e.g., marsh, agricultural fields, non-native vegetation) ○ Area of nesting substrate (length and width, diameter, etc.) ○ Surrounding land uses, including nearby foraging areas (2-5 miles) (can use remote imagery to help identify surrounding uses) • Record colony behavior and status ○ Singing ○ Carrying nest material ○ Colony quiet ○ Carrying food ○ Fledglings
Fish			
Desert pupfish	*Cyprinodon macularius*	• Presence/absence • Population size • Competition/interference/predation with from non-native	CH2M Hill 2006 • Monitor populations ○ Census or randomly sample suitable habitats areas, with stratification as needed to represent different habitat types (e.g., ponds, drains,

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
		fish • Invasive snails • Hydrologic alterations • Agricultural pesticides	water depths, flow rates, etc.); sample sites should be as homogeneous or uniform as possible ○ Baited wire minnow traps (steels traps preferred to over plastic traps?) ○ 1-2 hr trap set times (to minimize risk due to conditions such as anoxia) (based on desert pupfish protocol; applicable to chubs?) ○ Dawn or dusk hours (based on desert pupfish protocol; applicable to chubs?) ○ Closed-population removal method (vs. trap-mark-recapture methods) using 3-4 sequential sampling passes and calculate depletion rate to estimate population abundance within each sample unit using available software programs (e.g., CAPTURE) ○ Captured fish are temporarily held during sampling • Measure habitat covariates at time of population sampling ○ Dimensions of sampled habitat (e.g., width, aerial extent) ○ Vegetation type and cover ○ Habitat substrate ○ Water chemistry/quality (e.g., salinity, dissolved oxygen, turbidity/clarity, temperature, pesticides and other contaminants) ○ Presence/absence of other vertebrate and focal invertebrate species, including potential non-native predators/competitors ○ Prey/forage • Monitor genetic status regarding integrity of isolated populations and potential hybridization • Monitor for diseases/pathogens/parasites (e.g., tapeworms)
Mohave tui chub	*Siphateles (Gila) bicolor mohavensis*	• Presence/absence • Population size • Hydrologic alterations • Water quality • Predation/competition with non-native species • Habitat alteration by non-native species • Genetics (hybridization) • Parasites (tapeworms)	
Owens pupfish	*Cyprinodon radiosus*	• Presence/absence • Population size • Hydrologic alterations from diversions/ground water pumping • Non-native predators • Habitat alteration by cattails and other emergent vegetation encroachment	
Owens tui chub	*Siphateles (Gila) bicolor snyderi*	• Presence/absence • Population size • Hydrologic alterations	

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
		(overdrafting of Owens Valley aquifer) • Water quality • Non-native invasive predators • Habitat alteration by invasive emergent plants • Genetics (hybridization with other tui chub subspecies and hybrids) • Disease	
		Mammals	
Desert Bighorn sheep	*Ovis canadensis nelsoni*	• Presence/absence • Population size • Reproductive success • Physical condition • Availability of water sources (especially near escape terrain) • Availability of nutritious forage (especially to support reproduction) • Use of crossing structures • Human activities (e.g., OHVs)	CDFG 2010; Epps et al. 2003; Gagnon et al. 2013. • Population monitoring o Periodic aerial-based estimates (next major helicopter survey scheduled for Fall 2014) o Mark-resight estimates o Cameras stationed at watering holds o Population estimates by size class and sex o Reproductive success o Genetic monitoring o Extirpations and natural colonizations/reintroductions of mountain habitats • Predator monitoring, especially in smaller, more isolated habitat patches o Mountain lion (e.g., GPS tracking to identify frequent kill sites) o Bobcat o Coyote • Habitat monitoring

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
			○ Forage quality ○ Water sources in relation to foraging and escape habitat • Disease monitoring ○ Monitor sheep health at guzzlers and springs ○ GPS/Radio tracking to understand distribution and demographic of disease and disease transmission ○ Recent pneumonia outbreak in Plan Area is currently being tracked (NPS 2014) • Movement monitoring ○ Video and still camera surveillance (see Gagnon et al. 2013) at existing crossing structures (e.g., Interstate underpasses, any new overpasses, and selection culverts) and other high volume traffic roads ○ GPS tracking ○ Vehicle collision tracking
Mohave ground squirrel	*Xerospermophilus mohavensis*	• Presence/absence • Population size • Reproductive success • Habitat quality	Delaney and Leitner 2011; U.S. Air Force 2009 • Population monitoring ○ Camera "traps" (vs. live-trapping methods) to determine presence/absence ○ Monitor February-June during active period ○ Use in concert with live-trapping to conduct mark-recapture population estimates and long-term monitoring ○ Establish permanent sample transects, grids or trapping webs in key population areas, linkages, and expansion areas and interface zones with round-tailed ground squirrel (e.g., camera traps to monitor for potential range expansion) ▪ Consider rotating panel design to increase sample size ▪ Stratify by location and habitat type or suitability (e.g., based on

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
			USGS model) ▪ Track transects for presence/absence (reasonably high accuracy with 2-3 visits – see U.S. Air Force 2009) ▪ Grids for presence/absence ▪ Trapping webs for population estimates using distance sampling methods (e.g., Buckland et al. 2001); effective radius of approximately 150 m ○ Five-day trap sessions • Monitor habitat covariates ○ Species components and percent cover ○ Invasive species, particularly non-native grasses ○ Substrate and terrain (e.g., sandy soils on level terrain suitable for burrowing vs. rocky soils or desert pavement and rugged terrain)
		Bats	
California leaf-nosed bat	*Macrotus californicus*	• Presence/Absence at foraging sites • Relative abundance at foraging sites • Habitat quality at foraging sites • Presence/Absence at historical roosting site • Relative abundance at roosting site • Spatial relationship between suitable roosting sites and suitable foraging sites	Brown, P. 2006; Brown 2010; Miller 2001 • Monitor foraging habitat use ○ Conduct periodic acoustic surveys and/or mist netting surveys are key foraging locations (e.g., riparian zones, aquatic sites, washes) ○ Calculate abundance indices (e.g., Miller 2001) ○ Measure habitat covariates ▪ Vegetation type ▪ Habitat structure, including vegetation density, height, and width ▪ Prey availability • Monitor roosts (including covered and non-covered focal species) on periodic basis (ideally annually, but at least on 3-5 year cycles), including winter hibernacula and spring/summer maternity roosts; roost sites could be prioritized for monitoring based on size of colony, use (e.g.,
Pallid bat	*Antrozous pallidus*		
Townsend's big-eared bat	*Corynorhinus townsendii*		

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
		• Human disturbance of roosting sites • Pesticide use near suitable foraging sited	maternity, hibernaculum), disturbance risk, etc. ○ Abandoned mines ○ Natural roosts ○ Selection criteria (see Brown 2010) ▪ Historical roosts ▪ Maternity colonies ▪ Large colonies ▪ Accessible ▪ Protected by gates or location ○ Conduct exit counts, assisted by video cameras and acoustic recordings ○ Conduct acoustic monitoring at exit points of roosts ○ Conduct periodic captures using mist nets or harp traps at exit points of roosts to confirm some species poor detected/identified by acoustic methods (e.g., Townsend's big-eared bat, California leaf-nosed bat) (done separately from exit counts) • Continuous acoustic monitoring can be conducted over variable time periods (e.g., from 1-2 nights/month to several weeks or months), but may not be effective in detecting bats (or at least underestimate their occurrence) that have low intensity calls (e.g., Townsend's big-eared bat, California leaf-nosed bat)
		Plants	
Alkali mariposa-lily	*Calochortus striatus*	• Presence/absence • Population size/distribution (e.g., aerial extent of occupied areas or number of individuals)	Elzinga et al. 2001. • Monitor populations ○ Census or sampling of populations depending on discrete population numbers, sizes, and distributions ○ Implement appropriate monitoring frequency
Bakersfield cactus	*Opuntia basilaris* var. *treleasei*		

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
Barstow woolly sunflower	*Eriophyllum mohavense*	• Reproductive success • Non-native species and other disturbance factors (e.g., trampling, grazing, herbivory, OHVs, dust) • Suitable substrate conditions (e.g., soil chemistry, texture, dunes) • Surface and subsurface hydrologic conditions • Wildfire effects • Indicator species • Pollinators and/or seed dispersers	▪ More frequent monitoring (e.g., annual or semi-annual) for highly variable species (at least in early years of MAMP implementation and especially in years with average-above average rainfall to establish extant populations that may not be detectable in dry years); e.g., alkali mariposa-lily, Barstow woolly sunflower, desert cymopterus ▪ Less frequent monitoring for less variable species unlikely to change over shorter time periods (e.g., every 3-5 years); e.g., Bakersfield cactus ○ Determine appropriate spatial monitoring protocol (depends on factors such as monitoring objective, definition of target and sampled populations and desired level of inference); for example: ▪ Stratify sampling units (or macroplots) based on habitat characteristics as necessary • Census within macroplot if feasible (depends on size of macroplot, species, etc.) ▪ Select appropriate sampling method within macroplot (see Chapter 8, Sampling Design, in Elzinga et al. 2001) • Quadrats – allows estimates of plant density or frequency • Line transects – usually for cover estimates, but also may be used to position quadrats or points • Point-intercept transects – usually used for cover estimates ▪ Pilot testing of sampling designs likely needed. • Monitor habitat suitability at sample sites ○ Substrates (including disturbances such as compaction, erosion, trampling) ○ Hydrology (e.g., surface flows, water tables) ○ Soil chemistry
Desert cymopterus	*Cymopterus deserticola*		
Little San Bernardino Mountains linanthus	*Linanthus maculatus*		
Mojave monkeyflower	*Mimulus mohavensis*		
Mojave tarplant	*Deinandra mohavensis*		
Owens Valley checkerbloom	*Sidalcea covillei*		
Parish's daisy	*Erigeron parishii*		
Triple-ribbed milk-vetch	*Astragalus tricarinatus*		

Table II.3-17
Covered Species Effectiveness Monitoring Approach and Considerations

Common Name	Scientific Name	Potential Response Variables	Monitoring Approaches and Considerations
			○ Non-native species such as non-native grasses that may compete for water and space and shade out native species (e.g., alkali mariposa-lily, Bakersfield cactus) ○ Herbivory • Monitor reproduction factors ○ Phenological monitoring ○ Pollination (e.g., Bakersfield cactus)

Monitoring; Data Management, Analysis, and Reporting; Adaptive Management Feedback

The Adaptive Management Team would implement the prioritized effectiveness monitoring according to the specific protocols and standards developed during the early Plan implementation phase. The results of effectiveness monitoring would be analyzed and reported by the Adaptive Management Team to the DRECP Coordination Group to be included in the annual reports prepared by the DRECP Coordination Group. The Adaptive Management Team would develop and maintain the DRECP data portal for data management, analysis, and reporting purposes, as is described in Section II.3.1.3.6.

The annual reports prepared by the DRECP Coordination Group would include a description of the effectiveness monitoring conducted the previous year and to date since commencement of the DRECP (e.g., the effective date). The report(s) for effectiveness monitoring prepared by the Adaptive Management Team would include at minimum:

- Data and information about who collected the data and the frequency, timing, and duration of data collection.
- A description of the data analysis and results.
- Synthesis/integration of the year's monitoring and management results with previous years as applicable (e.g., analyzing trends).
- Identification of any significant problems or successes with the program that may alter the monitoring and management program approach.
- Suggested changes/revisions to the monitoring and management program, if any, based on the points listed above.
- Documentation of changed or unforeseen circumstances that occurred during the previous reporting year and how they were addressed.
- Discussion of triggers for adaptive management and how they were implemented.

Monitoring results would inform adaptive management, as illustrated in Exhibit II.3-6 and described in Section II.3.1.3.5.

II.3.1.3.4.3 Project-Level Monitoring

Project-level monitoring is monitoring that occurs in association with individual projects to ensure compliance with permit terms and conditions. For projects on non-BLM lands, project-level monitoring would be the responsibility of the permittee or third party with take authorization to document compliance sufficient to satisfy the requirements of the NCCP and GCP. Permittees and third-parties with take authorization would be responsible for monitoring the project areas throughout all phases of construction and operation.

Project-level monitoring includes verifying that incidental take of Covered Species does not exceed the level authorized by the permit, and that the permittee is carrying out the terms and conditions of the incidental take permit. The project-level monitoring required for projects on BLM-administered lands is described below. Project-level monitoring for permits issued under the GCP is described in Section 7.3.1 of Appendix M (GCP).

Project-Level Monitoring on BLM-Administered Lands

BLM requires holders of ROW grants to prepare and fund an ECCMP to ensure compliance with the BLM terms, conditions, and stipulations in the ROW grants, the Plan of Development, and required mitigation as provided for in the ROD (43 CFR 2805.16-17). The ECCMP also ensures that environmental conditions are monitored during the construction, operation, and decommissioning phases of a project. The ECCMP identifies a compliance contractor; monitoring requirements for each of the environmental resources on a project site; establishes metrics against which monitoring observations can be measured; identifies potential mitigation measures; and establishes protocols for incorporating monitoring observations and additional mitigation measures into standard operating procedures and BMPs.

BLM Compliance Monitoring Contractor

The compliance monitoring contractor would provide a compliance manager and on-the-ground compliance monitors to oversee and conduct inspections of construction, operations, and decommissioning activities, to evaluate and document compliance or non-compliance with required project measures and conditions during such activities. The compliance manager would be the point of contact position designated by the compliance contractor and would report to the BLM Authorized Officer or the designated BLM Compliance Manager for all compliance-related issues. The on-site compliance monitor would report to the compliance manager and be responsible for observing and reporting compliance with all terms, conditions, and stipulations of the BLM ROW grants for construction, operations, and decommissioning activities. The BLM Authorized Officer would be the BLM official with administrative authority for ROW grant issuance and authority for accepting and approving project-related changes. The BLM may also identify additional staff as additional designated Compliance Contacts, as needed for a specific project.

Although the compliance monitoring contactor directly contracts with the applicant for compliance monitoring services, including designation of service fees, the contract between the compliance monitoring contractor and the applicant may not be terminated without prior authorization of the BLM Authorized Officer.

To meet the compliance monitoring objectives, the ECCMP would include several required elements:

- The compliance monitoring contractor's responsibilities on the behalf of the BLM
- The compliance monitoring contractor's day-to-day tasks
- The compliance monitoring contractor's decision-making authority

Typical tasks carried out by the compliance manager would include:

- Oversight of the ECCMP
- Preparation of relevant project materials
- Participation in the BLM preconstruction meeting
- Participation in the applicant's environmental compliance training program
- Supervision and review of all environmental monitoring activities, materials, schedules and budgets
- Supervision of the compliance monitors
- Guidance on and review of compliance issues
- Review and processing of variance requests (see *Variances* below), in coordination with BLM and permitting or reviewing agencies, as necessary
- Review and distribution of daily and other periodic reports
- Confer regularly with the BLM Compliance Manager and Compliance Contacts
- Serve as contact between BLM and applicant
- Serve as BLM's representative to permitting agencies, private landowners, and special interest groups regarding environmental compliance monitoring efforts and issues.

On-site compliance monitors would be qualified and experienced in their particular tasks and would possess all required authorizations and permits needed to carry out their monitoring tasks. All compliance monitors would be familiar with the ECCMP, participate in the BLM preconstruction meeting, participate in the applicant's environmental compliance training program, and receive additional training, as needed, from the compliance monitoring contractor. All compliance monitors would be familiar with the permit requirements, project organizational structure, required building codes, fire codes, construction, operations and decommissioning documents, other relevant building standards, environmental compliance reporting responsibilities, and the chain

of communication. Compliance monitors would maintain daily contact with the compliance manager.

BLM Compliance Monitoring and Reporting

The compliance monitoring contractor would be required to provide adequate full-time on-the-ground compliance monitors during all construction, operations, and decommissioning activities. The number of compliance monitors required at any given time would depend on the type of activities, and therefore would be subject to ongoing evaluation and adjustment over time. For example, large-scale grading activities during construction likely would require more intensive compliance monitoring than routine operations. Monitoring adjustments could also be made in response to noncompliance problems, site-specific conditions during construction (e.g., seasonal use by wildlife), and the skill level and behavior of the contractor crews and foreperson.

Typically compliance monitoring of construction activities would occur on a daily basis and sensitive environmental resource areas would be inspected on a regular basis to ensure protection. During construction, the compliance monitors would communicate with the project inspectors on a regular basis to discuss the status of the construction activities and significant near-term (e.g., 2-3 days) construction activities. The compliance monitors would have the authority to immediately halt a noncompliance activity that is damaging or has the potential to damage a sensitive environmental resource, or an activity that is not being performed to building and construction standards.

The compliance monitors would submit daily monitoring reports, including photo-documentation as appropriate, for each location visited on that day. Each activity monitored would be assigned a compliance level (described below) and documented in a weekly report. The daily and weekly reports would be compiled in weekly summary database and made readily available to relevant agencies, including BLM and permitting agencies (e.g., on a non-public applicant website).

The daily and weekly reports would include relevant monitoring information, including, but not limited to:

- Description of general type of activity (i.e., construction grading, operation, decommissioning) and specific activity (e.g., grading, vegetation removal, erosion control, etc.)
- Percent of activity complete (for construction and decommissioning) or some other metric agreed to by BLM
- Presence/absence of environmentally sensitive resources
- Compliance level, including:

- Communication: a communication report to document and track relevant meetings or discussions between the compliance monitor and agencies, applicant representatives, other monitors, inspectors, or contractor personnel.
- Acceptable: inspected area or activity is in compliance with project specifications and mitigation measures.
- Problem area: inspected area or activity that does not meet acceptable compliance with project specifications and mitigation measures, but is not yet in noncompliance. This level is intended to identify issues or conditions that could result in non-compliance or a serious violation without remediation or corrective action.
- Noncompliance: inspected area or activity that violates project specifications or other requirements, damages sensitive environmental resource(s), or places sensitive environmental resources, personal safety, or worker safety at unnecessary risk.
- Serious violation: inspected area or activity that is in noncompliance and causes or poses risks of substantial harm or threat to sensitive environmental resources or worker/public safety. This level requires immediate reporting of the violation and direct communication among the compliance manager, the BLM Compliance Manager, and the relevant applicant representative regarding the violation, corrective actions, and possible enforcement actions.

Monthly reports would be issued that summarize the activities conducted during the reporting periods and would include at minimum the following information:

- A summary of reports completed by compliance monitors by compliance level (e.g., number of communications, acceptable reports, etc.) during the prior month and cumulatively to date for the project
- A summary of the variances approved by the compliance manager and compliance monitors and the net affected acreage during the prior month and cumulatively to date for the project

The compliance monitoring contractor would make the monthly report readily available to relevant agencies, including BLM and permitting agencies (e.g., on a non-public applicant website).

Variances

Unforeseen and unavoidable situations often occur during project construction, operations or decommissioning activities that require changes or adjustments to project methods and/or mitigation measures. Examples of such changes include route realignments, extra workspace, changes to previously approved construction work areas, and discrepancies or inconsistencies in project materials. Such necessary changes

would be processed through variance requests submitted by the applicant to the BLM for review and approval or denial. In some cases, BLM may delegate authority over variances to the compliance monitoring contractor.

Typically three variance levels are used to process variance requests:

1. Level 1 Variances (Field Decisions): Site-specific, minor, performance-based changes to project specifications, construction methods, or mitigation measures that result in similar or better protection of sensitive environmental resources or better constructability. Level 1 variances could be reviewed and approved or denied in the field by compliance monitors. Examples of Level 1 variances include erosion control structure modifications and minor site-specific plan specifications such as relocating a spoil storage area or minor changes to project design necessitated by site restrictions. Level 1 variances could also be used to communicate agency-directed changes to mitigation measures.
2. Level 2 Variances: Project changes that exceed the field decision authority of the compliance monitor and require processing and approval by the BLM Compliance Manager. Level 2 variances typically would be required for project changes that would affect BLM-administered lands outside the previously approved work area, but within areas that were already surveyed for sensitive environmental resources. Level 2 variances would usually require review of additional documentation, correspondence, and records. Examples of Level 2 variances would include additional work space outside the previously approved work area, but within previously surveyed areas; use of existing access roads not previously approved for use and that are not considered a "like use" that could be approved under a Level 1 variance; and project plan modifications different from the approved Plan of Development.
3. Level 3 Variances: Project changes that would affect BLM-administered lands outside the previously approved work area, and which had not been surveyed for sensitive environmental resources and/or would change the function, structure, technology required, or other part of the approved project. Level 3 variances could require review of additional documentation (including site surveys for sensitive environmental resources), correspondence, and records. A Level 3 variance could also require an amendment to the ROW grant. A Level 3 variance would be signed by the BLM Authorized Officer or the BLM Compliance Manager.

Stop Work Authority

A key component of effective environmental compliance monitoring would be stop work authority. The BLM would have the authority to stop work if project activities deviate from the protection requirements for sensitive environmental resources or from the approved project activities authorized by the BLM ROW grant. BLM may delegate stop work authority

to the compliance monitoring contractor, compliance manager, or compliance monitor, as deemed appropriate by BLM. Any stop work order would be immediately followed by formal written temporary suspension from the BLM Compliance Manager or BLM Authorized Officer.

Preconstruction Meeting

The compliance monitoring contractor would ensure that BLM conducts a preconstruction meeting prior to issuance of any Notices to Proceed. During the preconstruction meeting, the BLM Compliance Manager would discuss the requirement of the ROD, the ROW grant, the Plan of Development, and any additional stipulations. The compliance manager and at least one compliance monitor would participate in the preconstruction meeting.

Compliance Training and Education

The compliance monitoring contractor would be responsible for training its staff (or generally the environmental inspection team) and the construction personnel prior to the start of construction, with relevant BLM staff participating in the environmental training program. The environmental training program would follow the preconstruction meeting (see *Preconstruction Meeting* above). The BLM Compliance Manager or compliance manager would be responsible for conveying the components of the ECCMP, including the protection measures, the daily activities of the compliance monitors, the chain of command, the variance process, conflict resolution, stop work authority, etc. In addition, the compliance monitoring contractor would also train compliance monitors in all project duties and tasks, as described above in *BLM Compliance Monitoring Contractor*.

II.3.1.3.4.4 Land Use Plan Monitoring

Under the BLM LUPA, the BLM would conduct land use plan monitoring, which includes both implementation and effectiveness monitoring. In BLM terminology, implementation monitoring is the process of tracking and documenting the implementation, or the progress toward implementation, of land use plan decisions. The effectiveness monitoring component is the process of collecting data and information as the plan is being implemented in order to determine whether or not desired outcomes are being met or whether progress is being made toward meeting them.

II.3.1.3.4.5 Validation Monitoring

The DRECP Adaptive Management Team would implement validation monitoring as part of MAMP implementation. Validation monitoring assesses the validity of management actions to sufficiently accomplish the objectives originally conceived; Validation monitoring would be conducted in conjunction with effectiveness monitoring. Validation monitoring is

analogous to the targeted studies described by Atkinson et al. (2004), which serve to increase the knowledge of the effectiveness of management techniques. Validation monitoring could include short-term pilot studies and experimental management treatments. Validation would be a mechanism for implementing technological advancements to assist resource management (e.g., the development of LIDAR to monitor resources remotely).

II.3.1.3.5 Adaptive Management Framework

Adaptive management, in concert with effectiveness monitoring, is a key component of the overall DRECP conservation strategy and is the foundation for much of the long-term management of resources. Adaptive management would allow the DRECP to remain dynamic over time and responsive to changing conditions. The DRECP adaptive management framework is designed to accommodate ongoing improvements in data collection and analysis and increased scientific information and knowledge, while providing flexibility to support new ideas. This framework relies upon high levels of partner cooperation and an effective governance structure. This section describes the DRECP adaptive management framework, and the methods and tools that the Adaptive Management Team would develop and implement for conservation actions using an adaptive management approach.

The DRECP Adaptive Management diagram in Exhibit II.3-6 illustrates how science and effectiveness monitoring (as described in Section II.3.1.3.4.2) would support the adaptive management framework for the DRECP.

The adaptive management framework would be established and implemented together with the monitoring component of the DRECP MAMP, as described in Section II.3.1.3.4. Section II.3.1.3.5.1 describes the planning elements of the adaptive management framework, which are critical to the decision-making process. Section II.3.1.3.5.2 describes the implementation elements of the adaptive management framework. Section II.3.1.3.5.3 describes the evaluation and review elements of the adaptive management framework.

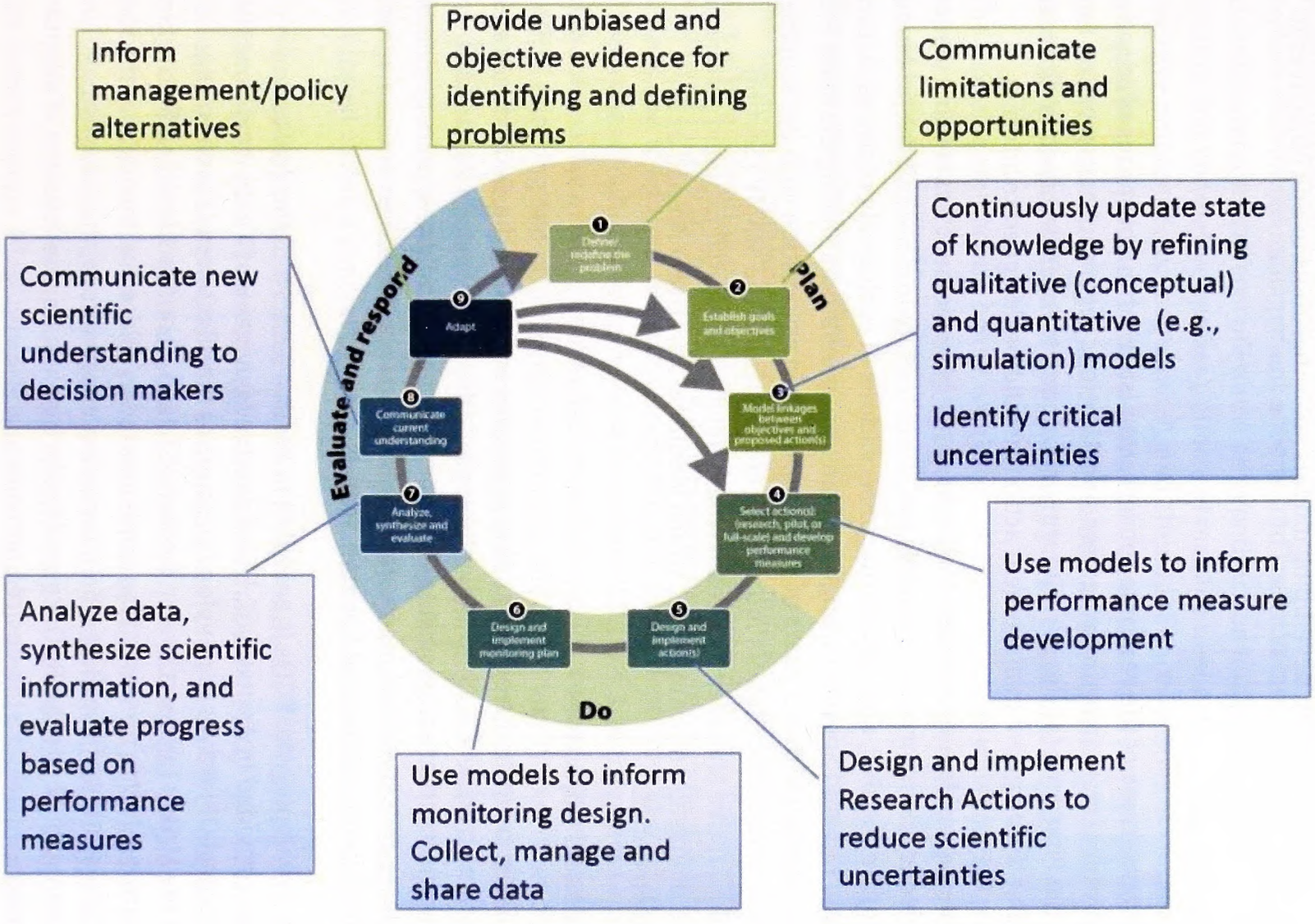


Exhibit II.3-6 The Adaptive Management Cycle of the DRECP Adaptive Management Framework

II.3.1.3.5.1 Adaptive Management Framework—Plan

The planning elements of the DRECP adaptive management framework include defining the problems, establishing the BGOs, developing models and other tools to link objectives to actions, and selecting actions.

Defining the Problems

Problem statements frame of the resource conservation issue for the purposes of adaptive management. Problem statements may be broad declarations regarding conservation for species across the Plan Area for the permit term or statements regarding specific threats and stressors that the adaptive management actions would be designed to address.

Problem statements would be generated by the Adaptive Management Team using current resource knowledge and information, models and other tools to understand the problems (as described further below), and monitoring observations of ecological processes, natural communities, and Covered Species throughout Plan implementation. During the early Plan implementation phases (within 5 years of Plan approval), in association with the scoping and prioritization of the effectiveness monitoring component of the MAMP (Section II.3.1.3.4.2), the Adaptive Management Team would develop the initial problem statements for the adaptive management framework, which would be iteratively refined as the program is implemented.

Biological Goals and Objectives

The Plan-wide BGOs provide the broad guiding principles and define the desired outcome of the conservation strategy. The Step-down Biological Objectives express the desired outcome of the conservation actions being implemented through adaptive management for the resources being conserved and managed, including landscape features and ecological processes, natural communities, and Covered Species.

The process for developing the BGOs is provided in Section I.3.4.3 and the draft set of DRECP BGOs are provided in Appendix C. The Adaptive Management Team would use the Step-down Biological Objectives to develop the scope of the effectiveness monitoring components of the MAMP (as described in Section II.3.1.3.4.2) and to identify effectiveness monitoring priorities during the early Plan implementation phase and throughout the long-term Plan implementation phase. Based on monitoring observations, the Adaptive Management Team would use the BGOs to guide selection and implementation of adaptive management actions to achieve the desired outcome.

Supporting Adaptive Management Through Models

Models, including conceptual (qualitative) and quantitative models, are cornerstones for adaptive management because they provide the means to generate testable hypotheses, explore alternative management actions, and test other assumptions. Models also help identify interactive effects of known or hypothesized important stressors and threats (e.g., wildfire and non-native species), effects of management actions (e.g., both positive and negative unintended consequences), and attendant uncertainties of model components and management outcomes. Understanding the interactive nature of the model components and outcomes, and reducing uncertainty in the model over time, is critical in the development of the effectiveness monitoring component of the MAMP.

The models summarized below would be used by the Adaptive Management Team to support MAMP decision-making. These models would be refined and other models likely would be developed through Plan implementation.

Management-Oriented Models

The Adaptive Management Team would employ management-oriented models as a key part of implementing conservation actions. Management-oriented models are widely employed in HCP (GCP) and NCCP programs to help guide implementation of conservation actions and to address uncertainties in the actions. As described in relation to the effectiveness monitoring framework in Section II.3.1.3.4.2, management-oriented models help summarize existing knowledge about the species, community or ecological system; help in selecting and prioritizing monitoring; and help identify uncertainties that are important for long-term resource management (Atkinson et al. 2004). They also lay the groundwork for developing hypotheses to be tested and analyzed in the adaptive management application of a conservation action. The ISA (2010) proposed that the DRECP have a monitoring framework that is explicitly hypothesis-based, with species monitoring performed within a context of community, landscape and ecosystem scale.

Various management-oriented models relevant to the DRECP have already been developed. Atkinson et al. (2004) describe several models that are directly relevant to DRECP, including an Aeolian sand natural community assemblage model of pressures on species and an Aeolian community sand process model. The USFWS has developed a management-oriented conceptual model for the desert tortoise (USFWS 2011). The ISA (2010) report included a management-oriented conceptual model for the Mojave fringe-toed lizard as an example of a model for a short-lived species with more volatile population dynamics than the desert tortoise. Most recently, the BLM Rapid Ecological Assessment Program has developed a number of models for both species and communities that occur in the Plan Area (http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas/dataportal.html). Peer-reviewed conceptual models are available for desert bighorn, golden

eagle, mule deer, Bell's vireo, burrowing owl, and willow flycatcher. There also are existing models for several natural communities, including Sonoran palo verde mixed cacti desert scrub, Sonora-Mojave creosote bush-white bursage, and riparian vegetation.

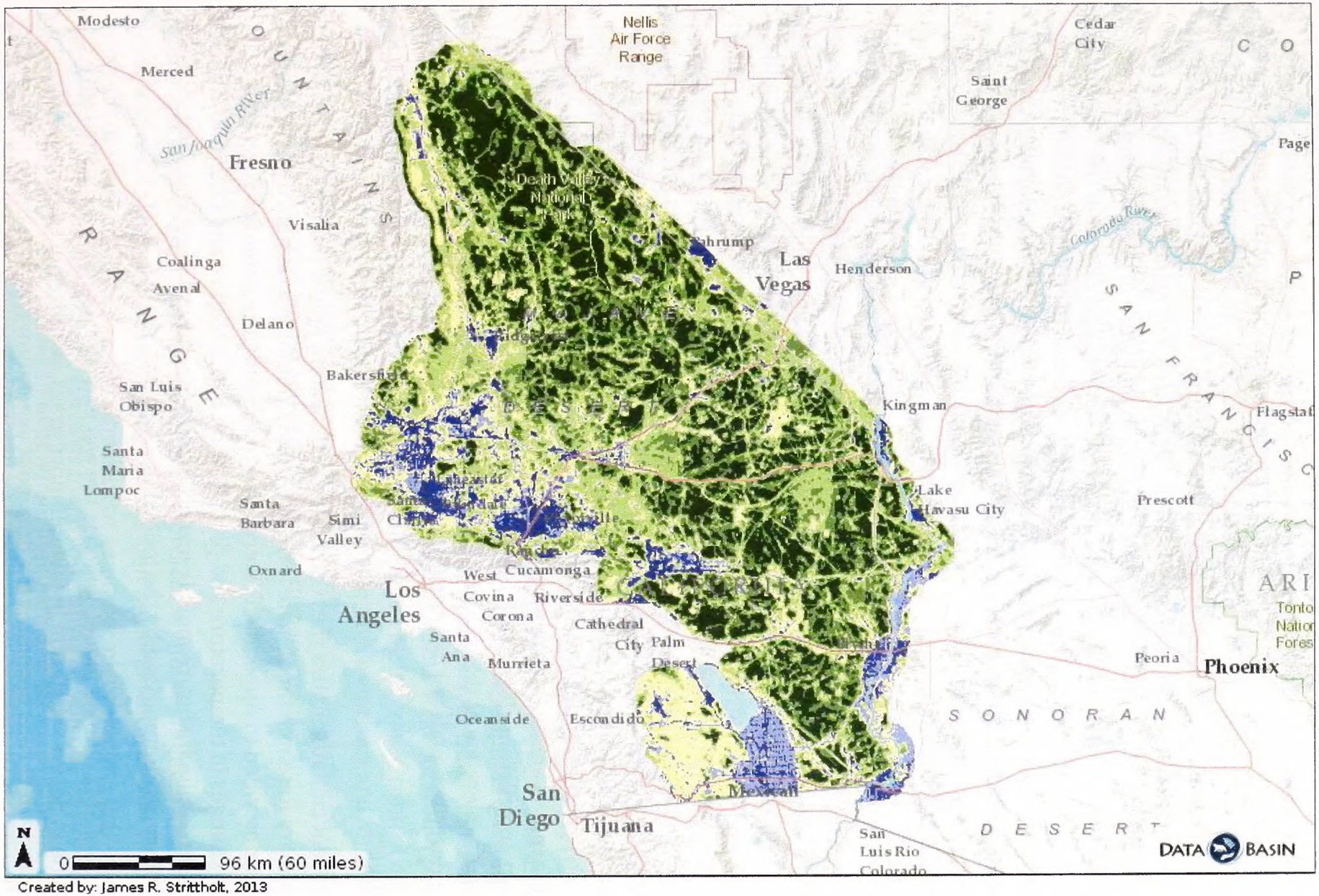
As shown in Table II.3-16 in Section II.3.1.3.4.2, the Adaptive Management Team would develop management-oriented models in the Existing Information Assembly, Synthesis, and Prioritization element of the effectiveness monitoring framework, which would occur during the early Plan implementation phase (within 5 years of Plan approval). As appropriate, the Adaptive Management Team use existing models or refine the models for application to the DRECP MAMP.

Terrestrial Landscape Intactness Model

Terrestrial landscape intactness is a quantifiable estimate of "naturalness" according to the level of anthropogenic influence based on available spatial data. Intactness considers an assemblage of spatially explicit indicators (e.g., roads, development, agriculture, invasive species, and habitat fragmentation) that help define the relative condition of the natural landscape. Intactness modeling, has been largely applied to forested landscapes (Lee et al. 2003; Heilman et al. 2002; Strittholt et al. 2006; Potapov et al. 2008) but many of the same principles apply to any natural landscape, including desert ecosystems.

For the DRECP, a terrestrial intactness model was created at the 1 km^2 resolution for the purposes of creating a foundation against which the ecological condition of species' distributions, natural communities, and areas planned for renewable energy development can be quantitatively evaluated. The model uses 39 different spatial datasets arranged in a hierarchical logic tree controlled by a series of logic operators and weighting schemes (additional information on model development is available at www.databasin.org). The DRECP terrestrial landscape intactness model explicitly describes the current landscape in relative terms along a continuum between very high to very low intactness (see Exhibit II.3-7).

Using the baseline model results for comparison, the Adaptive Management Team may use the model to predict changes in terrestrial landscape intactness over time by incorporating proposed development (e.g., as projects are proposed for the DFAs) and management plans (e.g., restoration of a habitat linkage). It can also be used as a monitoring and reporting tool for tracking both positive and adverse changes in the landscape as they occur. Results of the terrestrial landscape intactness model can be used as a stand-alone product, but it becomes more powerful when it is incorporated with other datasets. For example, terrestrial landscape intactness can be intersected with the mapped distribution for each Covered Species or natural community, which allows for the creation of individual current status profiles for these environments.



Created by: James R. Strittholt, 2013

Exhibit II.3-7 Terrestrial Landscape Intactness in Six Classes from Very High (Relatively Undisturbed in Dark Green) to Very Low (Highly Disturbed from Agriculture, Resource Development, or Urbanization in Dark Blue)

Conservation Values Model

Logic modeling conceptually similar to the terrestrial landscape intactness model was also applied to modeling conservation values throughout the Plan Area (additional information on model development is available at www.databasin.org). This model was not developed to capture all possible conservation values in the Plan Area, but rather to emphasize the values articulated during the DRECP planning process that were of greatest importance and for which some spatial data exist. The biological themes aggregated in the conservation values model included natural community diversity, rare species concentrations, concentrations of Covered Species modeled distributions, concentrations of Non-Covered Species modeled distributions, and relative quality of identified wildlife linkages.

Climate Change Models

Managing resources in the Plan Area in the future will require that managers consider a range of environmental changes as possible futures that could substantially alter our current understanding of management needs for the desert ecosystem. Climate change is perhaps the most important of these issues because it has the potential to transform the desert environment in unprecedented ways. As reported by numerous researchers and supported by dozens of past- and next-generation climate models, the North American deserts are expected to become warmer at faster rates than other regions of the country (Stahlschmidt et al. 2011). The latest climate projections from various sources agree that temperatures will increase in the Southern California deserts between 2°C and 5°C (Stralberg et al. 2009; Snyder and Sloan 2005; Snyder et al. 2004; Bell et al. 2004). While there is widespread agreement on the direction of change in temperature into the next century, past and current climate models show less agreement with future precipitation projections. An overview of the climate change modeling tools is provided below and these models are described in detail in Appendix P.

Climate Futures

The most recent climate models (i.e., Canadian Earth System Model [CanESM2], Model for Interdisciplinary Research on Climate [MIROC5], and Community Climate System Model [CCSM4]), as described in Appendix P, were used to examine the potential vegetation response to changes in temperature and precipitation in the Mojave and Colorado/Sonoran Deserts. All three climate future models project changes in natural vegetation covers into the next century, as summarized by the following:

- The CanESM2 climate model, which is the wet extreme, projects a substantial decline in desert vegetation in favor of more grass, shrubs, and trees in the Mojave Desert, with shrubs becoming the dominant vegetation type late in the next century.

In the Colorado/Sonoran Desert desert and grasses remain dominant under the CanESM2 model, but grasses become far more pervasive than desert over time.

- In contrast, under the MIROC5 model, the driest of the three models, there is less variability overall in the Mojave Desert, with desert vegetation remaining fairly consistent with historical levels and a slow trend to more shrub covers. The Colorado/Sonoran Desert shows similar variability, with more grass at different periods (e.g., mid-century) followed by drier conditions favoring desert and barren cover types.
- The CCSM4 model, which projects annual precipitation levels similar to historical levels, show less variability in the Mojave Desert compared to historical levels, with less desert and barren land and more grasses. The Colorado/Sonoran Desert shows similar variability compared to historic conditions with much less desert overall replaced by more grass.

The different vegetation cover results of the three climate models demonstrate the current uncertainty regarding changing environmental conditions in the Plan Area over the next century. However, some generalizations can be drawn from the model results that provide insight into likely adaptive management responses in the DRECP reserve system. Notably, projected expansion of grasses somewhere in the DRECP region is common for all three models. With normal variability of moisture in both deserts, but especially in the Colorado/Sonoran Desert, the risk of fire during the drier periods following excessive fuel build-up periods could result in many more and/or intense fires. Increased fire events have the potential to contribute to invasions of exotic grasses such as cheatgrass (*Bromus tectorum*) in the Mojave Desert and buffelgrass (*Pennisetum ciliare*) and red brome (*Bromus madritensis* ssp. *rubens*) in the Colorado/Sonoran Desert, thus creating a positive feedback loop of increasing invasion by these exotic species over time. Under any likely future climate scenario, therefore, the adaptive management strategy would incorporate increased monitoring for invasive species accompanied by increased control measures compared to current conditions. The increased risk of fire frequency and/or intensity related to climate change will also be exacerbated by the increased chance of accidental and intentional fire ignitions in and around human development.

Climate Refugia

Climate refugia are areas where the effects of projected climate changes are mapped to be least severe or places on the landscape that contain physical features that would help mitigate the impacts of a changing climate. For example, microhabitats that contain greater proportions of prolonged shade (such as in narrow canyons) will not be subject to the same high temperatures as experienced in neighboring unshaded areas. Organisms located in refugia areas are expected to be buffered to a certain degree from projected climate

impacts. Information about climate refugia would not only be used to prioritize DRECP reserve system assembly, but also for long-term management of the reserve system habitats and microhabitats to ensure that refugia retain their function. Details of the climate refugia modeling are provided in Appendix P.

Climate Velocity

Climate velocity is an index of climate change representing a measure of how quickly climate variables such as temperature will change (Loarie et al. 2009). Generally, Loarie et al. (2009) report that temperature change velocities are lowest in mountainous biomes and highest in flooded grasslands, mangroves and deserts. Loarie et al. (2009) also state that "species survival may depend as much on keeping pace with moving climate as the climate's ultimate persistence."

Climate velocity provides a consistent way to express disparate measures of climate change, and a useful way of comparing them more directly. For instance, if climate velocity for both temperature and aridity is calculated, both results have units of velocity (distance over time), and they can then be directly compared to each other. Climate velocity is also a useful concept to help better understand the effects of climate change on species and on ecosystems: a particular value of climate velocity at the edge of an arid area might represent the speed at which that edge might advance. We can relate that to the speed at which different species can move to maintain a tolerable climate: birds can keep up with very fast climate change (though their habitats may not); tortoises have less ability; and grasses and trees have even less. Having such information will inform adaptive management of the DRECP. More detailed information on climate velocity modeling is provided in Appendix P.

Selecting Actions

Selecting actions to be implemented through adaptive management is the last planning element of the adaptive management process. Not all conservation actions identified to fulfill a management program's goals and objectives are appropriate for adaptive management. Williams et al. (2009, p. iv), for example, list the kinds of questions the Adaptive Management Team would pose to determine whether a conservation action meets the conditions necessary to implement the action through an adaptive management framework.

The Adaptive Management Team would review the Conservation and Management Actions (CMAs) developed for the DRECP Conservation Strategy, and which are fully described in Section II.3.1.2.5. These CMAs are summarized as:

- Avoidance and minimization actions related to renewable energy and transmission Covered Activities (Section II.3.1.2.5.1 through II.3.1.2.5.4 and Section II.3.1.2.5.6).

- Avoidance, minimization, and management actions in the reserve (Section II.3.1.2.5.5).
- In existing conservation areas (i.e., LLPAs and MEMLs), existing management regimes would remain in place. The Adaptive Management Team would coordinate conservation actions implemented under the DRECP with the appropriate entity managing the existing conservation areas.
- In BLM LUPA conservation designation lands, resources would be managed according the DRECP CMAs and according to the unit-specific management actions to maintain the vegetation, fish and wildlife, and other resource values within the NLCS/ACEC/Wildlife Allocation unit as described in the BLM special land allocation management plans (Appendix L). Additional conservation actions identified through MAMP implementation may also occur in these areas.
- In lands added to the reserve through Plan implementation, the DRECP CMAs would apply. Additional conservation actions identified through MAMP implementation may also occur in these areas.
- Compensation actions that describe how the reserve would be built through acquisition-based compensation and how non-acquisition compensation actions would be implemented in the reserve (Section II.3.1.2.5.7). Table H-10 in the CMA Documentation Appendix (Appendix H) provides a listing of eligible non-acquisition actions that could be used for compensation for Covered Species.

Based on the review the CMAs, the Adaptive Management Team would: (1) recommend to the Coordination Group which actions should be implemented under an adaptive management framework; (2) designate relative priority levels for the recommended actions (3) determine whether the action is to be implemented as research, pilot, or full implementation; (4) determine whether it is to be an active or passive form of adaptive management; (5) develop the specific adaptive management plan for the action; and (6) include the action in the draft annual work plan. Based on the Adaptive Management Team's recommendations, the Coordination Group would have ultimately responsibility for selecting the action(s) to be implemented based on permit conditions, the funding available, and the implementation status of the overall operating conservation program, including the principle that management actions should be commensurate with the level and location of development of Covered Activities permitted pursuant to DRECP.

II.3.1.3.5.2 Adaptive Management Framework—Implement

The implement or "Do" phase of the DRECP adaptive management framework include design and implementation of the actions and associated monitoring. As described in Section II.3.1.3.3.3, the Coordination Group would approve an annual work plan that will specify the conservation actions to be implemented in the coming year, including the

selected adaptive management actions recommended by the Adaptive Management Team. The Coordination Group would ensure that the approved adaptive management actions are implemented in a manner consistent with the MAMP.

II.3.1.3.5.3 Adaptive Management Framework—Evaluate and Respond

The evaluating and responding elements of the adaptive management framework are where feedback is provided and course adjustments are made, as needed, based on continued learning gained from feedback. The evaluating and responding phase includes the following components:

1. Analyze, synthesize, and evaluate;
2. Communicate current understanding; and
3. Adapt.

The Adaptive Management Team would analyze, synthesize, and evaluate information gathered through the effectiveness monitoring component of the MAMP (Section II.3.1.3.4.2). This evaluation process would be transparent and communicated through the (see Section II.3.1.3.6 on information management). Using this process, as determined necessary, conservation actions would be modified (i.e., "adapted") to better achieve the Step-Down Biological Objectives, as well as inform other aspects of the operating conservation program. Because effective management is adaptive, the MAMP presumes that certain changes in the operating conservation program will occur throughout the life of the DRECP. The MAMP therefore will need to retain the flexibility to be revised and refined as new information on the life history or ecology of Covered Species, and the effectiveness of conservation actions, including adaptive management, is obtained.

The functionality of the DRECP data portal and the various updateable maps and models discussed above, and particularly the reporting and analytical tools, are fundamental for supporting an effective adaptive management framework. The DRECP data portal will provide decision makers with a system that achieves many of the elements for a successful long-term operating conservation program – accessibility, transparency, scientifically defensible content, and high levels of usability.

The Adaptive Management Team will be a primary user of these tools, evaluating outcomes from implementation of conservation actions, considering outside formal and informal input, and drawing upon other information, to make recommendations where needed to revise management approaches. The Adaptive Management Team would make recommended changes to the Coordination Group, who would make final decisions on those recommendations. Based on the various inputs, the Adaptive Management Team may recommend changes to problem statements, objectives, management-oriented models,

conservation actions, or monitoring approaches. This process will be ongoing, and governed by the schedule developed by the Coordination Group.

II.3.1.3.6 Information Management

A key component of the DRECP MAMP is communication between the Adaptive Management Team, the Coordination Group, the Stakeholder Working Group, Supporting Entities, Partners Working Group, permitting agencies, other agencies involved in implementing the DRECP, and interested parties. A web-based portal would be used to disseminate information and support implementation of the adaptive management plan.

The DRECP data portal would fulfill the following requirements:

1. Easily accessible to users
2. Clearly present all content
3. Accommodate a diverse and robust monitoring strategy
4. Facilitate sharing and collaboration
5. Provide flexibility in how content is managed (including data security)
6. Support high levels of transparency
7. Provide useful tools and reporting functions

The DRECP data portal would be used for the following purposes:

- House and manage all pertinent spatial datasets (including all model results)
- Support non-spatial files (e.g., Word documents, Excel spreadsheets, PDFs, PowerPoint files, and small image files)
- Support inclusion of new spatial datasets and other content over time
- Provide users with the ability to create customized maps, support numerous collaboration functions
- Provide existing and future specialized analytical tools

II.3.1.3.7 Nonbiological Resources MAMP

As part of the DRECP, the BLM will implement the LUPA and CMAs for nonbiological resources, in addition to those specified for biological resources. As noted, regulations in 43 CFR 1610.4-9 require that land use plans establish intervals and standards for monitoring and evaluation based on the sensitivity of the resource decisions, with additional specificity in the BLM Land Use Planning Handbook (H-1601-1), Chapter V (BLM 2005).

The BLM would monitor and evaluate management strategies and resource conditions and trends to determine the effectiveness of the LUPA and CMAs and to ensure that its implementation is achieving the desired results. Information on resource conditions obtained through monitoring would be used to assess the effectiveness of management strategies and evaluate whether or not management should be adapted to accommodate new information, changes in demands on resources, or other considerations.

II.3.1.3.7.1 Land Use Plan Monitoring

Land use plan monitoring is conducted in two stages. The first is to track that decisions are implemented, or making progress towards implementation, in accordance with the approved plan and ROD. The BLM conducts this type of monitoring as plan decisions become effective or when decisions to approve implementation-level plans or to implement site-specific projects are approved or implemented.

The next stage of monitoring is to determine whether land use plan decisions are achieving the desired effects. Effectiveness monitoring provides an empirical database on impacts of decisions and effectiveness of mitigation. Effectiveness monitoring is also useful for improving analytical procedures for future impact analyses and for designing or improving mitigation and enhancement measures.

Effectiveness monitoring is the process of collecting data and information to determine whether desired outcomes (expressed as goals and objectives in the land use plan) are being met (or progress is being made toward meeting them) as the allowable uses and management actions are being implemented. The goals and objectives for all resources other than biological resources are presented in Section II.3.2.3.

A monitoring strategy must be developed as part of implementing the land use plan that identifies indicators of change, acceptable thresholds, methodologies, protocols, and timeframes that would be used to evaluate and determine whether or not desired outcomes are being achieved.

The following sections provide example monitoring strategies for cultural resources and tribal interests, recreation, and visual resources. These examples may be adjusted if needed during the life of the Plan. For other resources, the BLM would monitor all the LUPA decisions and CMAs and implement adaptive management as necessary.

II.3.1.3.7.2 Cultural Resources

Public Law 111-11 identified types of BLM-managed conservation lands to be designated as National Conservation Lands. The DRECP is a major planning effort to identify which lands meet the definition in Public Law 111-11 for inclusion as National Conservation

Lands. These lands were identified in part based on having nationally significant cultural values. As part of the DRECP, the BLM would monitor these lands and LUPA actions to ensure the purpose of the LUPA is met.

In addition to including lands with nationally significant cultural values as part of the National Conservation Lands, the BLM LUPA also provides CMAs for National Scenic and Historic Trails and for cultural resources and tribal interests. The BLM developed the National Scenic and Historic Trails CMAs under the Federal Land Policy and Management Act (FLPMA) of 1976 and the National Trails System Act. As part of this effort, the LUPA provides goals and objectives for both these resources. The CMAs are designed to achieve these goals and objectives.

The CMAs for National Scenic and Historic Trails would provide a management corridor width and establish land use authorizations that would avoid other uses in the corridors without mitigation or appropriate compensation. The CMAs would restrict uses that interfere with the nature and purpose of the trails.

The CMAs for cultural resources and tribal interests provide a method to identify and protect archaeological data, identify places with traditional cultural and religious importance to federally recognized Native Americans, and design BLM actions to minimize impacts to cultural resources, among others. The management of cultural resources on BLM land is done in compliance with multiple federal laws, see Section II.3.2.3.3. As noted in this section, the CMAs are developed and recommended by an appropriately staffed interdisciplinary team in accordance with policies described in the BLM Manual, Sections 8100 through 8170, and consistent with the statewide protocol with the California SHPO and other guidelines from the SHPO.

Monitoring the National Scenic and Historic Trails and cultural resources and tribal interests CMAs will allow the BLM to review whether the implementation of the CMAs meet the stated goals and objectives. Monitoring also provides an opportunity to revise and adapt the CMAs if necessary.

Avoiding and Minimizing Impacts to Cultural Resources and Tribal Interests

A number of CMAs were developed specifically to avoid or minimize impacts. The CMAs for the entire Plan Area, DFAs, Study Area Lands, and Transmission Corridors, as well as NLCS and ACEC lands all require identification of cultural resources prior to use of this land and includes taking the cultural resources sensitivity into consideration prior to selecting a renewable energy site. The BLM must ensure that actions and authorizations in the Plan Area are designed first to minimize impacts on cultural resources including places of traditional cultural and religious importance to federally recognized Native Americans.

The CMAs require all development to abide by the requirements established in Section 110, Section 106, and Section 304 of the National Historic Preservation Act and Section 9 of the Archaeological Resources Protection Act.

Monitoring

Because it is unlikely that all cultural resources and tribal interests would be completely avoided by actions permitted under the DRECP, monitoring the CMAs is an important step to ensure they are achieving the desired goals and objectives. Monitoring the CMAs is also important to ensure the NLCS and ACEC areas designated under the LUPA are protecting the resources for which they were established.

The BLM, in cooperation with appropriate agencies and others, would develop interpretive materials and design trainings to provide stewardship programs to protect cultural resources and tribal interests. In order to ensure these types of actions meet the goals and objectives of the CMAs, the BLM will need to monitor the effects. This requires establishing a baseline, monitoring the disturbance of archaeological sites, and monitoring natural and man-made threats to cultural resources that can be quantified such as erosion, looting, vandalism, grazing, and OHV use.

The baseline data would allow the BLM to clearly identify whether the CMAs are achieving their desired results and if they are not, adapt those actions. By continuously monitoring the CMAs, the BLM and its partners can identify standard protection measures and best management practices that can be used more widely throughout the Plan Area.

The CMAs also provide protection for cultural resources and tribal interests in areas where renewable energy and transmission would be built. The CMAs include a management fee to be paid to the BLM as partial mitigation for cumulative effects that could be used to develop regional research designs and other forms of off-site and compensatory mitigation. Monitoring the success of regional designs would also be necessary to ensure they are successful. As with all monitoring, this allows the BLM to adapt and revise the regional design if it does not achieve the desired results.

II.3.1.3.7.3 Recreation

The EIR/EIS identifies goals and objectives for the LUPA recreation decisions in Section II.3.2.3.8, as well as a comprehensive suite of required CMAs that would avoid and/or minimize adverse impacts to recreational resources either on site or through consultation and coordination with potentially affected entities. The recreational CMAs are extensive and include management actions for the Special Recreation Management Actions (SRMAs) and Extensive Recreation Management Areas (ERMAs) designated through the BLM LUPA including management for renewable energy projects.

The CMAs also provide for recreation opportunities in the NLCS lands, ACECS, and Wildlife Allocations such that these areas are potentially available for recreation even though their primary goals are not recreation but rather conservation. Monitoring the CMAs will allow the BLM to review whether the implementation of the CMAs meet the goals and objectives and provides an opportunity to revise and adapt the CMAs if necessary.

The Recreation and Visitor Services goals and objectives draw on the BLM California-specific Recreation and Visitor Services Strategy was completed in 2008 (BLM 2008b). This Strategy was designed to meet the specific needs and changing demands of recreation visitors and changes in BLM recreation management. It includes a number of actions that are folded into the DRECP goals and CMAs and that can and should be monitored. Examples include:

- Completing an inventory of the recreation setting characteristics.
- Administering the setting to maintain diversity across the spectrum of recreation experiences.
- Working with business, organized recreation groups, outfitters, communities, and interesting individuals to care for public lands.
- Planning and managing lands for sustainable recreation-tourism.
- Working to identify appropriate fees in collaboration with communities, local governments, the private sector, and other agency cooperators.
- Improving information regarding travel routes including Geographic Information System (GIS) mapping.
- Designing sustainable travel systems that meet recreationists needs.
- Developing facilities and resources through partnerships and expanding visitor education, among many others.

Avoiding and Minimizing Impacts to Recreation

The BLM developed a number of CMAs to avoid or minimize impacts of renewable development and also to encourage and enhance the designation of areas managed for recreation. Specifically the BLM is seeking to improve access to recreation opportunities, ensure a quality experience and enjoyment of natural, biological, and cultural resources, and provide for and receive fair value in recreation.

Because the LUPA would designate up to 2.7 million acres of SRMAs and up to 880,000 acres of ERMAs, avoiding and minimizing impacts to these lands is important to ensure that these designations meet their objectives. CMAs are designed to protect the SRMAs and ERMAs while retaining other appropriate use. To facilitate this, the BLM designed

mitigation measures that are part of the CMAs to reduce impacts to recreation setting characteristics identified in Field Office RMPs or activity plans. Monitoring these measures and adapting to the information would ensure the successful meeting of the recreation goals provided in the LUPA and CMAs.

Monitoring

In order to monitor recreation the BLM would need to establish key parameters of the CMAs that could be measured to review success. Such parameters could include monitoring the Plan Area to quantify the number of recreational visits, types of recreational activities and use patterns, accomplishment of management objectives, and potential adverse impacts to resources and visitor experiences from recreational use. Monitoring programs would need to include actions such as:

- Installing and monitoring vehicle counters to observe visitation levels.
- Monitoring campground use to gauge visitor use patterns.
- Observing and documenting use of elements such as wildlife guzzlers to observe wildlife use levels.
- Engaging wildlife viewer to survey migratory birds to assess bird populations and visitor enthusiasm.

The results of the monitoring would provide an opportunity to identify actions to protect resources, enhance visitor experiences, and deal with health and safety needs in the area. The BLM, and any other management partners, would need to engage the proposed SRMA visitors through visitor surveys to ascertain patterns, preferences, and demographics.

Monitoring would help the BLM to detect and document natural and human-induced changes in resource conditions and visitor experiences, and offer insights into the effectiveness of resource management policies and objectives. It would also help agency personnel understand what might be driving the changes requiring intervention (corrective management actions or strategies).

Based on the information gathered, the BLM would be able to ensure the CMAs were successful or adapt them if necessary to meet the ultimate recreation goals and planning criteria.

II.3.1.3.7.4 Visual Resources

The DRECP EIR/EIS identifies a comprehensive suite of required CMAs developed to avoid, minimize, and/or mitigate adverse impacts on visual resources, see Section II.3.2.3.10. The Visual Resource CMAs are extensive, and incorporate state-of-the-art BMPs that have been

developed by BLM specifically for renewable energy development in the context of the Energy Policy Act of 2005, the FLPMA, and the BLM's Visual Resource Management (VRM) System.

Avoiding and Minimizing Visual Impacts

A number of CMAs were developed specifically to avoid or minimize impacts. A fundamental example is the CMA requiring project proponents to demonstrate and ensure that development (including transmission facilities) within each of the VRM Class polygons meets the management objectives of that VRM Class, as measured through a visual contrast rating process.

Other CMAs would avoid or minimize impacts by assigning VRM Classes to DFAs and to certain visually sensitive lands. Examples include:

- Managing all DFAs as VRM Class IV
- Managing all Variance Lands as VRM Class III
- Managing all NSHT Corridors, and Lands managed for Wilderness Characteristics as VRM Class II
- Managing all Wilderness and Wilderness Study Areas (WSAs) as VRM Class I (as per current BLM Policy.)

Importantly, the CMAs for Visual Resource Management require all development, whether within or outside of DFAs, to abide by the BMPs addressed in the BLM's *Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands*. Included are BMPs specific to wind, solar or geothermal energy development, as well as those for the design, construction, operation, and decommissioning activities common elements, detailed under the following categories:

- Visual impact analysis and mitigation planning
- Facility siting and design
- Structure design and materials selection
- Materials surface treatments
- Lighting design and operation
- Avoiding unnecessary disturbance
- Soil management and erosion control
- Vegetation management
- Interim and long-term reclamation
- "Good housekeeping" practices

The BLM designed the BMPs to be highly effective and neither expensive nor difficult to implement, particularly if incorporated early in the development process. Examples include successful revegetation, recontouring to match existing terrain characteristics, or painting facility components to blend with the landscape background.

Mitigation compensation requirements of CMAs include reclamation of visual impacts on off-site lands at various ratios, based upon the Visual Resource Inventory (VRI) Class of the project-impacted area. Additional mitigation may be required where projects affect viewsheds of specially designated areas (e.g., NSHT, National Parks, etc.)

Monitoring

One critically important element of the BMPs is the requirement for development and implementation of a Visual Resource Impact Monitoring and Mitigation Compliance Plan. This plan is a detailed, project-specific document that would be prepared and submitted for approval at the onset of the project planning process, prior to project approval, to serve as a guide to siting and design. This allows the BLM to review and respond to the plan prior to approving the project and to establish a baseline from which to monitor.

Visual design objectives within the Monitoring and Mitigation Compliance Plan would be measurable and monitored during construction, operations, and decommissioning. The Compliance Plan would include monitoring and compliance elements that establish the requirements and thresholds for acceptable performance, and measures for corrective actions. The visual contrast rating procedures would be included for field-based compliance assessment during operations and after decommissioning to gauge compliance with the project's visual impact mitigation requirements.

Provisions for monitoring the effectiveness of the visual impact mitigation strategy would be included to ensure developers implement required visual impact CMAs and to measure their effectiveness.

By requiring the preparation, submittal, and approval of a Visual Resource Impact Monitoring and Mitigation Compliance Plan, the BLM would ensure that the DRECP CMAs for Visual Resources have been incorporated into various aspects of a proposed project prior to construction. Monitoring of compliance with the plan during construction, operation, and decommissioning would require the BLM to assign personnel to monitor and report on project compliance (or to require project proponents to provide monitors). This would require not only qualified personnel (trained in Visual Resource Management), but also a database for reporting and tracking compliance, and a reporting protocol. Visual resources compliance could be tied to permit or lease renewals, regularly scheduled inspections, spot checks, and various other means to ensure compliance and accountability.

II.3.1.4 Overview Description of Covered Activities

This section provides a description of the distribution, magnitude, and scope of activities associated with renewable energy generation, transmission, and conservation activities for the Preferred Alternative under the DRECP. This describes how the Preferred Alternative would meet the renewable energy goals outlined in Section I.3.5.

Covered Activities include renewable energy development and transmission projects, and conservation activities as described and analyzed in the DRECP, that would be considered for incidental take permits under Section 2835 of the state NCCPA and/or Section 10 of the ESA, for otherwise lawful activities. Covered renewable energy development includes geothermal, solar thermal, photovoltaic (PV) solar, wind development and transmission. On nonfederal lands, renewable energy and transmission siting, construction, operation, and decommissioning activities and conservation activities would be considered Covered Activities for incidental take permits under Section 2835 of the state NCCPA and/or Section 10 of the federal ESA. On BLM-administered lands, the BLM LUPA and the NCCP address renewable energy and transmission siting, construction, operation, and decommissioning activities, and conservation activities, and BLM LUPA also addresses other land use management decisions on BLM-administered lands. The following describes the renewable energy generation, transmission, and conservation related activities that would occur on both federal and nonfederal lands. The specific land use management decisions addressed by the BLM LUPA are described in Section II.3.2.

The section includes a summary of DFA distribution, and is then subdivided by technology: solar, wind, geothermal, and transmission. Each technology section contains a description of the technology, the activities associated with siting, constructing, operating, and decommissioning the technology, and an estimated acreage associated with these activities.

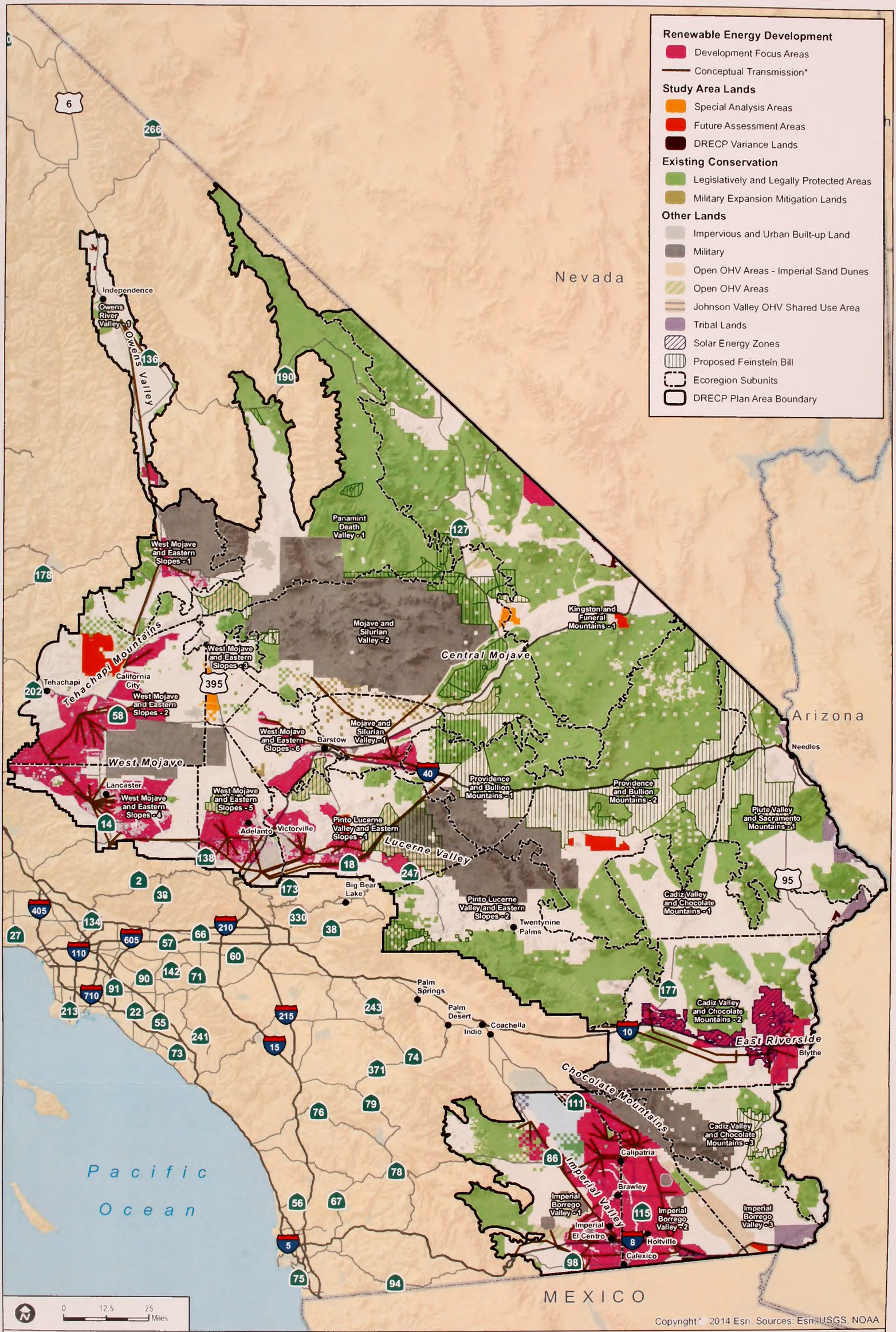
In the Preferred Alternative, renewable energy-related activities covered by the Plan would be confined to DFAs. If the activities are not sited within a DFA, they would no longer be considered a Covered Activity and would not enjoy the benefits the Plan affords. Generation development is focused in the West Mojave, Imperial Valley, East Riverside and around Barstow, with smaller areas in the Owens Valley and on the Nevada border. Figure II.3-3 shows the DFAs for the Preferred Alternative and Appendix G provides figures of the DFAs for each ecoregion subarea in the Plan Area.

Table II.3-18 provides a DFA acreage summary by ecoregion subarea and by ecoregion subunit (i.e., finer-grained geographic subdivisions within each ecoregion subarea). Figure II.3-3 shows the corresponding ecoregion subunits.

Table II.3-18
Preferred Alternative Development Focus Areas by Ecoregion Subarea and Subunit

Ecoregion Subarea	Ecoregion Subunit	DFA Acreage
Cadiz Valley and Chocolate Mountains	Cadiz - 1	—
	Cadiz - 2	267,000
	Cadiz - 3	<1000
Imperial Borrego Valley	Imperial - 1	344,000
	Imperial - 2	389,000
	Imperial - 3	—
Kingston and Funeral Mountains	Kingston - 1	30,000
Mojave and Silurian Valley	Mojave - 1	42,000
	Mohave - 2	—
Owens River Valley	Owens -1	15,000
Panamint Death Valley	Panamint - 1	—
Pinto Lucerne Valley and Eastern Slopes	Pinto - 1	152,000
	Pinto - 2	—
Piute Valley and Sacramento Mountains	Piute - 1	—
Providence and Bullion Mountains	Providence - 1	16,000
	Providence - 2	—
West Mojave and Eastern Slopes	West Mojave - 1	23,000
	West Mojave - 2	338,000
	West Mojave - 3	—
	West Mojave - 4	217,000
	West Mojave - 5	127,000
	West Mojave - 6	62,000
	Total DFA Acreage	**2,024,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*Transmission lines shown are based on the DRECP Transmission Technical Group (TTG) Report, which provides a conceptual transmission plan for the DRECP alternatives and is not intended for siting or alignment purposes.

FIGURE II.3-3

Preferred Alternative - Plan-wide DFAs

INTENTIONALLY LEFT BLANK

The distribution of different generation technologies varies depends on underlying factors that affect each technology. The method used to estimate the distribution of generation impacts across the Plan Area simultaneously accounts for the area available to each technology, potential interactions between technologies, and variation in the relative development potential of different DFAs. A more detailed description of the methodology is discussed in Chapter I.3 with additional detail provided in Appendix F. In the following section, each technology is discussed separately.

Table II.3-19a includes a summary of the DFAs by county by technology type. The technology type listed indicates what technologies are assumed feasible in the DFA. If multiple technologies are listed that indicates that more than one renewable energy technology could be feasible in that DFA. DFAs suitable for solar only are the most common in most counties. DFAs suitable for solar and wind are most common in Riverside and San Bernardino counties. Geothermal is only proposed in Imperial and Inyo counties under the Preferred Alternative. Table II.3-19b includes a summary of the DFAs by ownership class. For the Preferred Alternative, over 80% of the DFAs are on nonfederal lands and nearly 20% of the DFAs are on federal lands.

Table II.3-19a
Preferred Alternative Development Focus Areas by County by Technology Type

Technology Type Category by County	DFA Acreage
Imperial	**734,000**
Geothermal	114,000
Solar	364,000
Solar and geothermal	226,000
Solar and wind	25,000
Solar, wind, and geothermal	5,000
Wind	400
Wind and geothermal	40
Inyo	**45,000**
Geothermal	8,000
Solar	31,000
Solar and geothermal	6,000
Kern	**360,000**
Solar	172,000
Solar and wind	132,000
Wind	55,000

Table II.3-19a
Preferred Alternative Development Focus Areas by County by Technology Type

Technology Type Category by County	DFA Acreage
Los Angeles	**218,000**
Solar	218,000
Riverside	**268,000**
Solar	121,000
Solar and wind	144,000
Wind	4,000
San Bernardino	**399,000**
Solar	154,000
Solar and wind	210,000
Wind	36,000
San Diego	—
Total	**2,024,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.3-19b
Preferred Alternative Development Focus Areas by Ownership Class

Ownership Class	DFA Acreage
Federal Lands	
BLM-administered lands	367,000
Other federal lands	25,000
Nonfederal Lands	
Private lands	1,569,000
State and local public lands	64,000
Total	**2,024,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

The following sections describe the distribution of the DFAs along with an estimate of the total project area required for each technology (i.e., the estimated summation of all potential projects that could be constructed for each technology type) and the associated area of permanent disturbance, a summary of which is provided in Table II.3-20. For each technology type, impacts would vary among individual projects, but to enable a meaningful programmatic analysis, typical values were estimated for different activities based on recently constructed renewable energy projects and extrapolated to the potential future distribution of generation across the Plan Area. Where feasible, the areal extent ("footprint") of an activity was quantified and its contribution to the overall impacts was defined. Where it was infeasible to quantify the footprint of an activity, a qualitative description is provided.

Table II.3-20
Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies

Technology	Estimated Permanent Disturbance (Acres)	Total Project Area (Acres)
Solar	103,000	103,000
Wind	9,000	162,000
Geothermal	17,000	17,000
Ground-mounted distributed generation	15,000	15,000
Total	**144,000**	**297,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.3.1.4.1 Solar Energy Generation (Including Utility-Scale Distributed Generation)[2]

This section describes the various solar energy generation technologies in operation today, including some of the specific characteristics of projects based on current technology and design. However, future advances in technology may affect the design of facilities within the timeframe of the DRECP. Therefore, the following descriptions are limited to the features used on current solar facilities. Future designs may deviate from the specific

[2] For the purpose of analysis, all distributed generation was considered to be located in the same areas as utility-scale solar; therefore requiring the same ancillary facilities (i.e., covered activities) as utility-scale solar projects.

descriptions described here, and depending on the level of increased impacts associated with such future designs, may not be eligible for coverage under the DRECP.

Solar power facilities convert sunlight into electricity, either directly using photovoltaic (PV) technology, or indirectly with concentrated solar power (CSP). CSP focuses the sun's energy to heat a working fluid, such as heat transfer fluid, hydrogen, or water, which is then used to drive turbines or engines to produce electricity.

Features that are common to all solar projects include ancillary facilities, such as operation and maintenance buildings that may be used for storage and maintenance purposes. All solar projects would require access roads for construction, routine maintenance, and operations. Within a project site, maintenance roads would be required to provide access for washing and maintenance of the solar fields. In addition, on-site energy storage may also be included within the design of the solar projects. Large-scale electrical power storage technology is in developmental stages at present, but would likely be part of future projects.

Solar Thermal

Solar thermal plants consist of two major subsystems: a collector system that collects solar energy and converts it to heat, and a power block that converts heat energy to electricity. CSP power plants produce electricity by collecting the sun's energy to generate heat using various mirror or lens configurations. The technologies discussed include:

- Parabolic trough
- Parabolic dish
- Power tower
- Compact Linear Fresnel Reflector

For solar thermal electric systems, the heat is transferred to a turbine or engine for power generation.

All CSP systems make use of the direct normal insolation component of solar radiation, that is, the radiation that comes directly from the sun. While the collection systems vary among the types of solar thermal facilities described below, the power block facility is common to all facilities. A power block facility typically includes an electrical building, auxiliary boilers, an air emission control system for the combustion of natural gas or propane in the auxiliary boilers, a steam turbine generator, a cooling tower, water treatment equipment, a hazardous materials storage area, petroleum-based fuel storage and delivery system, auxiliary equipment (emergency diesel generator, diesel fire pump, etc.), and water storage tanks. The acreage requirement for all solar thermal systems is 7.1 acres of per megawatt

(MW), with reported mean capacity factors of 43.3% and a reported range of values from 22 to 65%.

Parabolic Trough Solar Thermal Systems. Parabolic trough systems concentrate direct normal insolation using single-axis tracking, parabolic curved, trough-shaped reflectors onto a receiver pipe or heat collection element located at the focal line of the parabolic surface. A high temperature heat transfer fluid picks up the thermal energy in the heat collection element. Heat in the heat collection element is then used to make steam in the steam generator. The steam drives a conventional steam-Rankine power cycle to generate electricity. A collector field typically contains many parallel rows of troughs connected in series. Rows are typically placed on a north–south axis, allowing the single-axis troughs to track the sun from east–west during the day.

Parabolic Dish-Engine Systems. A solar parabolic dish-engine system comprises a solar concentrator (or "parabolic dish") and the power conversion unit. The concentrator consists of mirror facets that combine to form a parabolic dish. The dish redirects direct normal insolation to a receiver mounted on a boom at the dish's focal point. The system uses a two-axis tracker such that it points at the sun continuously.

The power conversion unit includes the thermal receiver and the engine-generator. In the solar receiver, radiant solar energy is converted to heat in a closed hydrogen loop, driving the Stirling engine-generator. Power conversion units are air-cooled.

Power Tower Systems. A power tower uses thousands of sun-tracking mirrors called heliostats to redirect direct normal insolation to a receiver at the top of a tower. Heliostats are placed around the power tower, directing solar radiation towards the power tower. The heliostats are connected with communication cables between each heliostat that are utilized to transmit signals from a computer that ensures the heliostats are moved throughout the day to track the movement of the sun across the sky. A solar power tower is located within the center of the heliostats and is utilized to capture the solar radiation being reflected off the heliostats. The receiver at the top of the tower either generates steam directly, or heats a molten nitrate salt heat transfer fluid to generate steam. The steam is used in a conventional turbine generator to produce electricity.

Compact Linear Fresnel Reflector. The compact linear fresnel reflector is a solar thermal technology in which rows of mirrors focus sunlight onto a fixed absorber located at a common focal point of the reflectors. Compact linear fresnel reflector solar systems alternate the inclination of the mirrors to focus solar energy on multiple absorbers. The compact linear fresnel reflector is similar to the more common solar parabolic trough systems in that it uses one-axis tracking to focus solar radiation on a linear receiver.

Solar Photovoltaic

Solar PV converts sunlight (also known as insolation) directly into electricity. The power produced depends on the material involved and the intensity of the solar radiation incident on the cell. Single or polycrystalline silicon cells are most widely used today. Single crystal cells are manufactured by growing single crystal ingots, which are sliced into thin cell-size material. Thin film solar cells are made from layers of semiconductor materials only a few micrometers thick. These materials make applications more flexible, as thin film PV can be integrated into roofing tiles or windows. Thin film cells significantly reduce cost per unit area, but also result in lower efficiency cells. Gallium arsenide cells are among the most efficient solar cells and have other technical advantages, but they are also more costly and typically are used only where high efficiency is required even at a high cost, such as space applications or in concentrating PV applications. Additional advanced technologies are under development including dye sensitized solar cells and organic light emitting diodes.

Concentrating Solar Photovoltaic Systems. Concentrating photovoltaic (CPV) plants provide power by focusing solar radiation onto a PV module, which converts the radiation directly to electricity. Either mirrors or lenses can be used to concentrate the solar energy for a CPV system. Most CPV systems use two-axis tracking to achieve point focus images on PV cells. The acreage requirement for PV systems is 7.1 acres per MW, with reported mean capacity factors of 43.3% and a reported range of from 15.5% to 28%.

Ground-Mounted Distributed Generation

Ground-mounted distributed generation is not a specific type of technology, but could include any of the above technologies. Ground-mounted distributed generation is a classification of generation defined by the limited size of the projects and the likely distribution of projects. For the purpose of analysis, ground-mounted distributed generation was considered to be projects of 20 MWs, occupying 142 acres that would be sited on disturbed and agricultural land. The acreage requirement for ground-mounted distributed generation systems is 7.1 acres per MW, with reported mean capacity factors of 43.3% and a reported range of from 15.5% to 28%.

Activities Associated with Solar Energy Generation

This section describes the activities associated with solar projects that would be covered by the Plan. Both construction and operational activities are described in Table II.3-21 and individual activities are quantified by acreage where feasible. It is not feasible to quantify all activities as the impacts may be too site-specific (i.e., dependent on a particular geographic location); where this is the case, a general description of the activity is provided.

Table II.3-21
Description of Activities Associated with Solar Energy Generation

Activity	Description
Pre-Construction and Construction Activities	
Geotechnical borings	Full geotechnical testing to establish the suitability of the site for construction would vary depending on the size and technology.
Installation of temporary meteorological stations	Meteorological towers would be installed across a potential site to assess the generation potential. The number of towers is typically dependent upon the size of the project terrain although typically there may be 2–4 towers on each site.
Temporary access routes and staging areas for meteorological towers and geotechnical borings	Temporary vehicular access to undertake pre-construction activity may result in unusual vehicular disturbance off existing routes, and require the use of established tracks and roadways where possible.
Site reconnaissance (including species-specific surveys)	Site surveys would be required prior to any permitting or construction activities. Activities would be required to utilize existing roads, tracks, and access.
Access roads/spur roads (permanent and temporary)	Off-site road construction or improvements may be required if local roads necessary for site access are not designed for gross vehicle weights of up to 80,000 lb (36,000 kg), the federal limit for tractor-trailer trucks on most U.S. highways. State-specific and local limits may also apply. Contact with local transportation authorities would be made to assure proper signage is placed to notify the public of traffic hazards. Generally, a primary road would be required to access a site that is sufficiently large to accommodate a large daily construction workforce and delivery traffic. Such an access road would reach as far as parking areas (paved or non-paved) for construction workers, laydown areas for equipment and supplies, or other major site locations. Roads leading to the facility would be constructed to federal and state standards and would typically consist of a 20 foot wide two lane road with graded 5-foot shoulders as recommended for average daily traffic volumes greater than 400 vehicles (AASHTO 1994) for an overall road width of 30 feet. If access road construction were required, the construction ROW width would likely be less than 60 feet, corresponding to a two-lane highway with 12-foot lanes and 3-foot shoulders. A 60-foot ROW would result in a disturbed area of about 7 acres per mile of road constructed. On-site access roads would be required to access facilities and generation arrays. Construction of permanent roads within the boundary of the facility would mostly consist of compacted gravel. For the purpose of estimating disturbance, impacts of roads within a solar project boundary are assumed to be part of the generation facilities.

Table II.3-21
Description of Activities Associated with Solar Energy Generation

Activity	Description
Ground-disturbance activities (including grading and clearing vegetation)	Solar facilities generally require relatively flat sites, and show varying degrees of sensitivity to gradient depending on technology. Heavy equipment that may be used in the site preparation phase would include bulldozers, graders, excavators, scrapers, front-end loaders, trucks, cranes, rock drills, chain saws, chippers, trenching machines, and equipment for blasting operations if required. Vegetation clearance and site grading is assumed across the entirety of the area required for generation facilities (solar arrays, troughs mirrors towers, etc.). The site may be partially re-vegetated but cannot be considered fully restored while operational. Impacts to the entire site within, the perimeter boundary are considered permanent.
Site preparation (e.g., excavation for foundations)	The size of foundations for generation facilities would be dependent on wind shear, and consequently foundations may be installed at various depths. For tower-based CSP technologies wind loading and the structure weight of towers, and the weight and vibration of steam turbines, dictate more robust foundations that would typically require excavations to 30–45-foot depths, depending on existing subsurface conditions. Other solar technologies such as PV and solar trough require foundations at grade level. Permanent buildings, including operation and maintenance buildings, would typically require a concrete-on-slab foundation at grade level. Transmission switchyards typically have drilled pier, mat, and pad type foundations that are installed with a grounding grid, before being backfilled to grades.
Operations and maintenance buildings, and general facilities	Permanent operations and maintenance buildings, including control rooms, would be constructed utilizing standard building and construction techniques. Ancillary facilities are assumed to include parking and equipment storage facilities and would typically occupy 5–10 acres.
Clearing, staging, parking, construction trailer, and equipment and material storage areas	Temporary construction areas, including laydown yards, on-site construction trailers, and material storage would require clearing and grading and are assumed to be occupy 40–50 acres per project. For analysis purposes temporary construction facilities are assumed to occupy 40–50 acres per project situated within the footprint of the

Table II.3-21
Description of Activities Associated with Solar Energy Generation

Activity	Description
	final development. Therefore, no additional acreage beyond that of the final long-term project footprint is assumed for solar facilities.
Evaporation ponds	Evaporation ponds may be required as part of cooling structures for solar thermal projects. They are often lined with clay or plastic to enable water retention. These facilities would be designed to deter use by birds and bats.
Fencing (temporary and permanent, for both wildlife and security)	Temporary security fencing around laydown yards, on-site construction trailers, material storage, and on site cement batch plants would be required. Permanent security fencing may surround the perimeter of the site; however, site permeability must also be considered in site design and used unless operationally infeasible.
Temporary drainage and erosion control (e.g., diversion channels, retention/detention basins, silt fences, erosion fabrics)	Temporary drainage and erosion control may be required at laydown yards and temporary sites, and would be determined on a project specific basis to comply with county, state, and federal requirements.
Permanent drainage: conveyance or semi-natural	Culverts and drainage modification may be necessary to divert and control runoff. Drainage systems would be constructed to federal and state standards. Permanent drainage management systems would be designed seek to minimize the disruption to natural flow. Further, the design would minimize areas of direct vegetation removal, grading, re-routing, and leveling; and minimize the amount of active stormwater management using re-routed or man-made channels, ponds and culverts.
Flood control structures	Temporary flood control may be required at laydown yards and temporary sites including temporary roads, and would be determined on a project specific basis.
Installation of utility services	Utility services would be required for operation and maintenance buildings. Installation may include trenching and backfilling activities, and would use established ROW. Utility services include: • Electric distribution lines, facilities, and interconnects • Natural gas lines • Sewage facilities/pipelines • Telecommunication lines and facilities • Trash collection and disposal • Water wells or municipal water supply and pipelines

Table II.3-21
Description of Activities Associated with Solar Energy Generation

Activity	Description
Meteorological stations	Permanent meteorological stations are assumed to be up to 265 feet tall, self-supporting monopole structures with an assumed permanent disturbance footprint of 0.02 acre.
Transmission collector lines	Transmission collector lines for a solar facility are typically trenched 48 inches below grade. Where collector systems run overhead, they may be strung on steel or wood monopoles 60–80 feet high.
Generator tie line (gen-ties)	Generator tie-lines are sole-use facilities constructed by an electric generator to interconnect and transmit its power to the electric grid. Depending on the size of the generation facility and the substation to which the facility is being connected, these lines can be between 69 and 500 kilovolts (kV). For 69 kV lines, conductors are typically installed on 68–120-foot tall steel or wood monopole structures. Higher voltages can be installed on either monopole or lattice steel structure of up to 160 feet tall. Generator tie lines are described as part of transmission impacts because of the possibility that impacts may occur outside DFAs.
Operation and Maintenance Activities	
Steam turbine and generation operations (solar thermal including power towers and parabolic trough systems)	Solar thermal plant operations may require substantial amounts of water for steam generation, cooling, and other industrial processes. Systems can be wet cooled, hybrid, or dry cooled, which would use up to 14.5 AFY/MW, 2.9 AFY/MW, or 1.0 AFY/MW of water, respectively. Dry-cooling reduces the amount of water used, but it also reduces efficiency and output capacity, particularly in hotter climates such as the desert. Note: Activities associated with groundwater usage are not considered Covered Activities under the DRECP.
Solar thermal power tower operation (solar flux)	Heliostat technologies use a centrally located tower to collect the focused sunlight from the surrounding arrays of heliostats. Power towers are currently up to 765 feet high and glow with the reflected light from the heliostats when in operation. The concentration of light and heat from the surrounding heliostats may increase the energy flux and consequently the air temperature in the flux zone. A safe flux limit (measured in kW/m^2) has not been determined.
Cleaning of generation facilities, including solar arrays, mirrors, etc.	Regular cleaning of solar thermal heliostats and parabolic troughs is necessary to maintain optimal performance. For the purpose of analysis, water usage was assumed to be 0.5 AFY/MW for parabolic troughs and heliostats. For PV facilities, regular cleaning using water may not be required. The assumed water demand for PV is 0.05 AFY/MW.

Table II.3-21
Description of Activities Associated with Solar Energy Generation

Activity	Description
Dust suppression	Activities required to reduce fugitive dust as the consequence of plant operation that would be undertaken on an as needed basis following standard industry best management practices. Activities include water spraying and use of chemical suppressants.
Fire and fuel management	Fire fuel load management would be undertaken on an as needed basis following standard industry best management practices that minimize impacts on biological resources to the extent feasible. Vegetation management undertaken to reduce fire risk within transmission ROW would be necessary.
Integrated pest management, including trapping and regulated use of pesticides	Pesticides may have to be applied during the operation of a project to control pests and weeds. Such applications must comply with the Federal Insecticide, Fungicide, and Rodenticide Act and state equivalent requirements. In addition, energy sites are subject to federal provisions to control noxious weeds and invasive species and may be subject to regulations governing state-established control areas. Use on BLM-administered lands would comply with the terms of the BLM lease and/or ROW grant.
Cleaning, maintenance, repair, and replacement of access roads and spur road	Cleaning, repair, and maintenance would be undertaken on an as needed basis following standard industry best management practices and additional guidance on a project-by-project basis.
Cleaning and maintenance of facilities	Maintenance, repair, and replacement of generation facilities includes but is not limited to: cleaning, maintenance, repair, and replacement of metrological stations; cleaning, maintenance, repair, and replacement of lines/pipelines and facilities, including those used for utility services; cleaning, maintenance, repair, replacement, and repainting of buildings/structures (including towers/poles); and fence repair and replacement. Cleaning and maintenance would be undertaken on an as needed basis following standard industry best management practices and additional guidance assessed on a project-by-project basis. Activities are assumed to be undertaken within the boundary of already disturbed areas. Maintenance of flood control structures would be undertaken on an as needed basis following standard industry best management practices that minimize impacts on biological resources to the extent feasible.

Table II.3-21
Description of Activities Associated with Solar Energy Generation

Activity	Description
Hazardous materials treatment and disposal	Disposal of hazardous waste would be undertaken on an as-needed basis following applicable federal and state laws and regulations and standard industry best management practices that minimize impacts on biological resources to the extent feasible.
Night lighting	Lighting would be installed throughout the project sites for security and nighttime use of facilities. It is assumed that lighting management would be undertaken following standard industry best management practices that project lighting downwards to minimize impacts on sensitive biological resources to the extent feasible. Lighting configuration, color, and flash patterns would be coordinated with the Federal Aviation Administration where necessary.
Solid waste disposal	All solid waste disposal is assumed to be off site at facilities permitted to receive such waste.
Decommissioning	
Removal of structures	Decommissioning would involve removal of all aboveground facilities and gravel workpads and roads. Subsurface facilities (grounding rods and grids, tower and building foundations, natural gas pipelines, etc.) would be removed to a minimum depth of 3 feet from the surface and otherwise abandoned in place. Laydown areas, each nominally 3 acres in size, would be established to support decommissioning; some may be located on the laydown areas used during construction. Dismantled components would be staged at laydown areas for only as long as necessary to arrange for their removal to disposal, reclamation, or recycling facilities.
Restoration and re-vegetation	All spills and contaminated soils would be remediated. All gravel packs would be removed. Reclamation of laydown areas, substations, access roads, and other "deconstruction" areas would commence immediately upon completion of the dismantlement of the system.

Notes:
lb = pounds; kg = kilograms; kv = kilovolts; AFY = acre-feet per year; MW = megawatts; kW = kilowats; m^2 = square meters

Although the area available to solar generation would be more extensive in the DFAs than for other technologies, not all DFAs were considered suitable for solar development. Areas where construction was considered infeasible, for example where the slope was greater

than 5%, were excluded from consideration (a more detailed discussion of constraints is presented in Section I.3.5).

Solar projects can range from small-scale developments of a few MWs that occupy tens of acres up to 1,000 MW projects that occupy thousands of acres. Given the programmatic nature of the DRECP, extensive detailed analysis of effects that are project-specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the acreage that would be affected by solar development within each ecoregion subarea of the Plan Area (Table II.3-22).

When estimating the impacts of solar projects on biological resources, it was assumed that the construction of projects would result in the permanent loss of all resources within the boundary of the project. Two reasons are given for this: (1) unlike other technologies, solar projects are generally fenced to exclude wildlife and result in modification to natural processes for the life of the project; and (2) although some vegetation may be preserved at some project locations, this would not be universal and conditions of service often lead to the removal of vegetation to reduce fire risk. Further, the extensive removal, modification and grading within the project boundary, even if vegetation were not completely removed, could lead to edge effects that effectively modify the remaining vegetation communities. Therefore, the acreage requirements for roads, operation and maintenance facilities, and switchyards required for each facility are included in the overall estimated boundary of the solar project. Similarly, short term impacts, such as construction and laydown yards, were assumed to be within the final boundary of the project and therefore subsumed within the boundary estimate. Table II.3-22 summarizes the long-term impacts for solar technologies, and provides the following information:

- **Total Long-Term Ground Disturbance Impacts.** Estimated total acreage affected by solar development activities such as vegetation clearance, grading, and construction. This is effectively a summation of the solar generation facility footprints, including operations and maintenance building, switchyard, and road construction impacts. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance are considered permanent for the purpose of analysis.
- **Total Project Area.** An estimate of the total area occupied by a given project. For dense technologies like solar generation, the total project area is identical to the total permanent ground-conversion impacts.

Table II.3-22
Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Preferred Alternative

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	26,000	18,000	7,000
Imperial Borrego Valley	40,000	7,000	33,000
Kingston and Funeral Mountains	3,000	2,000	700
Mojave and Silurian Valley	3,000	1,000	2,000
Owens River Valley	500	500	—
Panamint Death Valley	—	—	—
Pinto Lucerne Valley and Eastern Slopes	8,000	2,000	6,000
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	1,000	500	500
West Mojave and Eastern Slopes	37,000	5,000	32,000
Total	**118,000**	**37,000**	**80,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.3.1.4.2 Wind Energy Generation

This section describes wind energy technology in operation today, including some of the specific characteristics of projects based on current technology and design. However, future advances in technology may affect the design of facilities within the timeframe of the DRECP. Therefore, the following description is limited to the features used on current wind facilities. Future designs may deviate from the specific descriptions provided here, and depending on the level of increased impacts associated with such future designs, may not be eligible for coverage under the DRECP.

Projects typically consist of ancillary facilities, supporting infrastructure and multiple arrays of wind turbines distributed across a project site to best take advantage of prevailing winds. Features that are common to all wind projects include operation and maintenance (O&M) buildings, switchyards and substations, and wind turbines. All wind projects would also require access roads for construction, routine maintenance, and operations.

Wind turbines consist of three main parts: the turbine tower, turbine rotor, and nacelle. The turbine tower typically consists of tubular steel pole sections. Turbines generally

would be spaced no less than 1.2 rotor diameters apart, but may be spaced farther apart for environmental considerations and to prevent wind shadowing (wind blockage by other turbine structures). Modern turbines are generally a horizontal-axis design. A turbine is composed of a tower, nacelle, hub, blades/rotor, controller, central Supervisory Control and Data Acquisition system for communication, transformer, braking system, safety lighting, and lightning protection system. For current turbines the total height at the highest point of the rotor blade rotation would be between 388 feet and 492 feet above ground surface. The ground clearance for the rotor blades at their lowest point of rotation would be between 91 feet and 138 feet above ground surface. Turbines typically include a transformer located either in the turbine unit or at the base of each turbine that is utilized to step-up the electricity received from the wind turbine for distribution in the collector cable system. The collector system connects the individual turbines and transmits electricity to a centrally located collector substation.

Activities Associated with Wind Energy Generation

This section describes the activities associated with wind projects that would be covered by the DRECP. Both construction and operational activities are listed and described in Table II.3-23. Where feasible, acreage impacts of individual activities are quantified, although it is not feasible to quantify all Covered Activities as the impacts may be too site-specific (i.e., dependent on a particular geographic location); where this is the case, a general description of the activity is provided.

Table II.3-23
Description of Activities Associated with Wind Energy Generation

Activity	Description
Pre-Construction And Construction Activities	
Geotechnical borings	Full geotechnical testing of multiple bores to a depth of up 40 feet would be required at each proposed turbine location before construction begins.
Installation of temporary meteorological stations	Meteorological towers are installed across a potential site to assess the wind generation potential. The number of towers is typically dependent upon the size of the project terrain although typically there may be 2–4 towers on each site. Meteorological towers assess wind density at a height similar to typical turbine towers, and are typically 200-foot-tall guyed monopole structures.
Temporary access routes and staging areas for meteorological towers and geotechnical borings	Temporary vehicular access may result in disturbance, but access corridors would be identified, utilizing existing tracks and roadways where possible.

Table II.3-23
Description of Activities Associated with Wind Energy Generation

Activity	Description
Site reconnaissance (including species-specific surveys)	Site surveys would be required prior to any permitting or construction activities. Activities are assumed to utilize existing roads, tracks, and access.
Access roads/spur roads (permanent and temporary)	Construction of a permanent road to each turbine is necessary for both construction and operations. The extent of road construction is dependent upon the site topography, condition, and extent of current roads. Access roads require a shallow gradient (typically less than 10%) to enable heavy lifting cranes to access the turbine sites. In steep or complex terrain, road width may be 40 feet or wider to accommodate the turning circle of vehicles delivering turbine components. Access roads for turbine construction may have to be temporarily widened to accommodate heavy vehicles that transport tower components and nacelles. For example, recent construction for the Ocotillo Express Wind project in Imperial County required the construction of 42 miles of new road for the 350 MW project. Similarly, the nearby Tule Wind project required 23 miles of access road for a 201 MW project. For the purpose of analysis 0.33–0.35 acre of road impacts were assumed for each 2 MW turbine.
Ground-disturbance activities (including grading and clearing vegetation)	Vegetation clearance for construction and operational activities would occur at all sites. At each turbine site, vegetation clearance and grading would be necessary to prepare the ground for heavy lifting cranes and transport vehicles. Typically, an area about 400 feet in diameter (2.885 acres) is cleared for each turbine, within which an area is compacted and stabilized to enable the use of heavy lifting cranes. Additional clearance would be required for substations, control and maintenance buildings etc. The expected effects associated with these components are discussed below.
Site preparation (e.g., excavation for foundations)	Grading and foundations would be necessary for all permanent structures, including turbine sites, switchyards, and operations and maintenance buildings. Different methods are used for constructing the foundations for wind turbines, depending upon geotechnical conditions and loading: **Patrick and Henderson Inc. Foundation.** This patented foundation type would be drilled or dug to approximately 15 to 35 feet deep and would be approximately 18 feet in diameter. The foundation would be in the configuration of an annulus—two concentric steel cylinders. The central core of the smaller, inner cylinder would be filled with soil removed during excavation. In the cavity between the rings, bolts would be used to anchor the tower to the foundation, and the cavity would be filled with concrete. Bolting the tower to the foundation would provide post-

Table II.3-23
Description of Activities Associated with Wind Energy Generation

Activity	Description
	tensioning to the concrete. **Rock Anchor.** For each foundation, 6 to 20 holes would be drilled approximately 35 feet into the bedrock, and steel anchors would be epoxy-grouted in place. A reinforced concrete cap containing the anchor bolts would be poured on the top of the steel anchors to support the tower structure. **Spread-Footing.** This foundation for turbines or other structures would be square or octagonal and formed with reinforcing steel and concrete. This type of foundation could be as large as 35 feet by 35 feet and 6 feet to 10 feet thick. • Transmission switchyards would typically have drilled pier, mat and pad type foundations installed with a grounding grid below grade before back filling occurs. • Permanent buildings would typically require no more than a concrete slab on foundations at grade level.
Turbine erection	To enable the lifting and erection of each turbine, a cleared and graded temporary work area 400 feet in diameter is assumed. Ground disturbance during construction would lead to soil compaction and while the area may be re-vegetated it should be considered permanently disturbed. Therefore, each turbine would result in up to 2.885 acres of permanent disturbance.
Ancillary buildings and general facilities.	Permanent operations and maintenance buildings would be constructed utilizing standard building and construction techniques. Ancillary facilities are assumed to include parking and equipment storage facilities and would typically occupy 5 acres.
Clearing, staging, parking, construction trailer, and equipment and material storage areas	Temporary construction areas, including laydown yards, on-site construction trailers, material storage, and on-site cement batch plants, would require clearing and grading and are assumed to occupy 40–50 acres.
Fencing (temporary and permanent, for both wildlife and security)	Temporary security fencing around laydown yards, on-site construction trailers, material storage, and on-site cement batch plants would usually be required. Permanent fencing is only required around operations and maintenance buildings, switchyards, and met towers. Individual turbines are not usually fenced.
Temporary drainage and erosion control (e.g., diversion channels, retention/detention basins, silt fences, erosion fabrics)	Temporary drainage and erosion control may be required at laydown yards and temporary sites, and would be determined on a project specific basis, and comply with county, state, and federal requirements.

Table II.3-23
Description of Activities Associated with Wind Energy Generation

Activity	Description
Permanent drainage: conveyance or semi-natural	Culverts and drainage modification may be necessary to divert and control runoff. Drainage systems would be constructed to federal and state standards. It is assumed that permanent drainage management systems would seek to minimize the disruption to natural flow. Further, the design would minimize areas of direct vegetation removal, channel re-routing, grading, and leveling; and minimize the amount of active stormwater management using channels, ponds, re-routing and man-made channels, and culverts.
Flood control structures	Temporary drainage control may be required at laydown yards and temporary sites including temporary roads, but would be determined on a project-specific basis.
Installation of utility services	Utility services would be required to operations and maintenance buildings. Installation may include trenching and backfilling activities, but would seek to use established ROW. Utility services include: • Electric distribution lines, facilities, and interconnections • Sewage facilities/pipelines • Telecommunication lines and facilities • Trash collection and disposal • Water wells or municipal water supply and pipelines
Meteorological stations	Permanent meteorological stations are assumed to be self-supporting monopole structures up to 265 feet above ground surface with a permanent disturbance footprint of 0.02 acre
Transmission collector lines	Transmission collector lines for a wind facility are typically run at 34.5 kV. Collector systems may be installed overhead on steel or wood monopoles between 60–80 feet high, or may be installed underground in a trench 4 feet deep.
Generator tie lines (gen-ties)	Generator tie lines are sole-use facilities constructed by an electric generator to interconnect and transmit its power to the electric grid. Depending on the size of the generation facility and the substation to which the facility is being connected, these lines can be between 69 and 500 kV. For 69 KV lines, conductors are typically installed on 68–120-foot-tall steel or wood monopole structures. Higher voltages can be installed on either monopole or lattice steel structure of up to 160 feet tall.
Operation and Maintenance Activities	
Wind turbine operations	Operation of wind turbines, by definition, requires the blades to spin to generate electricity. Turbines are typically between 300 and 500 feet above ground surface, including blade length, and for the purpose of analysis turbines are assumed to be 492 feet above ground surface,

Table II.3-23
Description of Activities Associated with Wind Energy Generation

Activity	Description
	to blade tip and 344 feet above ground surface to the turbine nacelle. Under operational conditions each turbine results in a blade swept area of between 2.47–2.55 acres, depending upon the length of the blades. Blades may be operational at any time of the year and in wind speeds between 3.5 m/s and 5.5 m/s (15–55 mph). For analysis purposes, each turbine was assumed to be 2 MW with a blade swept area of 2.55 acres.
Dust suppression	Activities required to reduce fugitive dust as the consequence of plant operation would be undertaken on an as needed basis following standard industry best management practices. Activities include water spraying and use of chemical suppressants.
Fire and fuel management	Fire fuel load management would be undertaken on an as needed basis following standard industry best management practices that minimize impacts on biological resources to the extent feasible. Vegetation management undertaken to reduce fire risk within transmission ROW would be necessary.
Integrated pest management, including trapping and regulated use of pesticides	Herbicides may have to be applied during the operation of a project to control invasive weed species. Such applications must comply with all applicable federal and state laws and regulations, including but not limited to the Federal Insecticide, Fungicide, and Rodenticide Act and state equivalent requirements. In addition, energy sites are subject to federal provisions to control noxious weeds and invasive species and may be subject to regulations governing state-established control areas. Use on BLM-administered lands would comply with ROW grant.
Cleaning, maintenance, repair, and replacement of access roads and spur road	Cleaning, repair, and maintenance would be undertaken on an as needed basis following standard industry best management practices and additional guidance on a project-by-project basis.
Cleaning and maintenance of facilities	Maintenance, repair, and replacement of generation facilities would, on average, require each turbine to undergo 8 to 16 hours of scheduled mechanical and electrical maintenance per year. Routine maintenance may include, but would not be limited to, replacing lubricating fluids, checking parts for wear and replacing as required and recording data from data-recording chips in all pertinent equipment including anemometers. Maintenance of other facilities would include: cleaning, maintenance, repair, and replacement of metrological stations; cleaning, maintenance, repair, and replacement of lines/pipelines and facilities, including those used for utility services; cleaning, maintenance, repair, replacement, and repainting of buildings/structures (including towers/poles); fence repair and replacement; access roads, crane and turbine pads, erosion control systems, and perimeter fencing would

Table II.3-23
Description of Activities Associated with Wind Energy Generation

Activity	Description
	be regularly inspected and maintained to ensure minimal degradation. Cleaning and maintenance would be undertaken on an as needed basis following standard industry best management practices and additional guidance assessed on a project-by-project basis. Activities are assumed to be undertaken within the boundary of already disturbed areas. Maintenance of flood control structures would be undertaken on an as needed basis following standard industry best management practices that minimize impacts on biological resources to the extent feasible.
Hazardous materials treatment and disposal	Disposal of hazardous waste would be undertaken on an as needed basis in compliance with all applicable federal and state laws and following standard industry best management practices that minimize impacts on biological resources to the extent feasible.
Night lighting	Lighting would be installed throughout the project sites for site for security and nighttime use of facilities. It is assumed that lighting management would be undertaken following standard industry best management practices that project lightings downwards to minimize impacts on sensitive biological resources to the extent feasible.
Solid waste disposal	All solid waste disposal is assumed to be off site at a facility permitted to receive such waste.
Decommissioning	
Removal of structures	Decommissioning would involve removal of all aboveground facilities and gravel workpads and roads. Subsurface facilities (grounding rods and grids, tower and building foundations, natural gas pipelines, etc.) would be removed to a minimum depth of 3 feet from the surface and otherwise abandoned in place. Laydown areas, each nominally 3 acres in size, would be established to support decommissioning; some may be located on the laydown areas used during construction. Dismantled components would be staged at laydown areas for only as long as necessary to arrange for their removal to disposal, reclamation, or recycling facilities.
Restoration and re-vegetation	All spills and contaminated soils would be remediated. All gravel packs would be removed. Reclamation of generation facilities laydown areas, substations, access

Table II.3-23
Description of Activities Associated with Wind Energy Generation

Activity	Description
	roads, and other "deconstruction" areas would commence immediately upon completion of the dismantlement of the system.

Notes:
kv = kilovolts; MW = megawatts; m/s = meters per second; mph = miles per hour

The area available to wind development was constrained by several factors, including areas where construction was considered infeasible, and areas where turbine construction has been precluded by ordinance or general policy.

Wind projects can range from small-scale developments of a few megawatts that occupy tens of acres up to several hundred megawatt projects that occupy thousands of acres. Given the programmatic nature of the DRECP, extensive detailed analysis of effects that are project specific (i.e., geographically site-specific) is infeasible. Therefore, the magnitudes of impacts are described in terms of the acreage that would be affected by wind energy generation activities within each ecoregion subarea of the Plan Area.

Wind projects result in relatively diffuse impacts spread across a wide area. Turbines are widely spaced and connected by permanent access roads, and transmission infrastructure, with centralized maintenance facilities and switchyards. Unlike solar, not all the land within the boundary of a wind project was assumed to be permanently disturbed by project activities. For the purpose of analysis, estimates of disturbed acreage were the sum of the estimated acreage required for turbine pads, roads, ancillary facilities, and supporting infrastructure. Short term construction activities, such as laydown yards, were assumed to result in long-term disturbance within the project boundary, and were also included in the estimate of permanently disturbed acreage. In addition to estimates of ground disturbance, the area likely to be impacted by the operation of the turbine rotors (airspace) was also estimated. For analysis purposes turbines were grouped into conceptual projects of up to 200 MWs to enable an estimation of impacts from ancillary facilities, roads, turbines etc. Table II.3-24 summarizes the long-term impacts for wind technologies, and provides the following information by ecoregion:

- **Total Project Area**. An estimate of the total area occupied by a given project. For technologies where the project may be spread across a greater area (e.g., wind energy generation), the permanent impacts are distributed over a larger area.
- **Estimated Long-Term Ground Disturbance**. Estimated total acreage directly disturbed by Covered Activities described above. This is effectively a summation of all potential wind generation facility footprints, including individual turbine pad, operations and maintenance building, switchyard, and road construction impacts.

This estimate also includes the additional impacts that would occur as a consequence of construction activities including construction areas, laydown yards, and storage facilities. Due to the difficulty of habitat restoration in a desert environment all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.

- **Turbine Rotor Swept Area** – An estimate of the total aerial acreage affected by the rotation of turbine blades while a wind facility is operating.

Table II.3-24
Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subarea – Preferred Alternative

Ecoregion Subarea	Project Area (acres)			Long-Term Disturbance (acres)			Rotor Swept Area (acres)		
	Plan-Wide	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	57,000	50,000	7,000	3,000	3,000	400	2,000	2,000	200
Imperial Borrego Valley	6,000		6,000	400		400	200		200
Kingston and Funeral Mountains	—	—	—	—	—	—	—	—	—
Mojave and Silurian Valley	—	—	—	—	—	—	—	—	—
Owens River Valley	—	—	—	—	—	—	—	—	—
Panamint Death Valley	—	—	—	—	—	—	—	—	—
Pinto Lucerne Valley and Eastern Slopes	38,000	10,000	29,000	2,000	500	2,000	1,000	300	900
Piute Valley and Sacramento Mountains	—	—	—	—	—	—	—	—	—
Providence and Bullion Mountains	—	—	—	—	—	—	—	—	—
West Mojave and Eastern Slopes	60,000	4,000	56,000	3,000	200	3,000	2,000	100	2,000
Total	**162,000**	**64,000**	**98,000**	**9,000**	**3,000**	**5,000**	**5,000**	**2,000**	**3,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to estimate the acreage amounts listed in this table.
The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.3.1.4.3 Geothermal Energy Generation

Geothermal resources can provide energy for power production and other applications by using subsurface heat from the earth to generate steam and drive turbine generators. Geothermal power can be developed where subsurface temperature gradients are elevated, such as in areas of young volcanism. However, there are other geologic settings favorable to geothermal development, including areas where the earth's crust is relatively thin, which leads to greater heat flow from the earth's interior. Tectonically active (but not necessarily volcanic) areas are also favorable because of the presence of significant faulting and fracturing that can allow deep circulation and heating of ground waters. Subsurface temperature gradients measured in wells help to determine the potential for geothermal development and the type of geothermal power plant installed. High-energy sites are suitable for electricity production, while low-energy sites are suitable for direct heating. Most of the known and most easily accessible geothermal resources in the United States are concentrated in the west and southwest parts of the country.

Geothermal power generation facilities generally consist of a production well that is drilled into a known geothermal reservoir. Typically, an injection well is also drilled to return used geothermal fluids to the geothermal reservoir. Hot, pressurized geothermal fluid, or a secondary working fluid, is allowed to expand rapidly and provide rotational or mechanical energy to turn the turbine blades on a shaft. Three geothermal power plant technologies are typically used to convert hydrothermal fluids to electricity. The conversion technologies are dry steam, flash, and binary cycle. The type of conversion used depends on the state of the fluid (whether steam or water) and its temperature. Dry steam power plant systems use the steam from the geothermal reservoir as it comes from wells, and route it directly through turbine/generator units to produce electricity. Flash steam plants are the most common type of geothermal power generation plants in operation today, and use water at temperatures greater than 360°F that is pumped under high pressure to the generation equipment at the surface. Binary cycle geothermal power generation plants pass moderately hot geothermal water by a secondary fluid with a much lower boiling point than water. This causes the secondary fluid to flash to vapor, which then drives the turbines.

Activities Associated with Geothermal Energy Generation

This section describes the activities associated with geothermal projects that would be covered by the DRECP. Both construction and operational activities are listed and described in Table II.3-25. Where feasible, acreage impacts of individual activities are quantified, although it is not feasible to quantify all Covered Activities as the impacts may be too site-specific (i.e., dependent on a particular geographic location); where this is the case, a general description of the activity is provided.

Table II.3-25
Description of Activities Associated with Geothermal Energy Generation

Activity	Description
Pre-Construction and Construction Activities	
Geotechnical borings	Full geotechnical testing to establish the suitability of the site for construction would vary depending on the size and technology. Exploratory borings to test temperature gradients are assumed to require up to 12 individual holes disturbing up to 0.15 acres per hole or about 2 acres per project.
Temporary access routes and staging areas for geotechnical borings	Temporary vehicular access to undertake pre-construction activity may result in disturbance but access corridors would be identified, utilizing existing tracks and roadways where possible.
Site reconnaissance (including species-specific surveys)	Site survey would utilize the existing roads, tracks and access or may assess the areas on foot.
Access roads/spur roads (permanent and temporary)	Generally, a single road would be required to access the site. Roads leading to the facility would be constructed to federal and state standards and would typically consist of a 20-foot-wide two-lane highway with 2 feet for shoulders on either side. Construction of permanent roads to access wells is necessary for both construction and operations. The extent to which roads would need to be constructed is dependent upon the site topography, condition, and extent of current roads. Access roads within the boundary of a project site would consist of compacted gravel no more than 10 feet wide.
Ground-disturbance activities (including grading and clearing vegetation)	Grading and clearing of vegetation would be necessary for the construction of the main generation site, and for each well pad. Up to 40 acres of permanent clearing and grading would be required for the main site and about 2 acres for each well pad. For a 50 MW plant consisting of a power plant site and about 30 well pads, about 100 acres of permanent ground disturbance would occur.
Site preparation (e.g., excavation for foundations)	Geothermal power plant facilities may require excavation 6–8 feet below grade due to the weight and size of facilities such as cooling towers where applicable. Permanent buildings, including operation and maintenance buildings, would typically require no more than a concrete-on-slab foundation at grade level. Transmission switchyards typically have drilled pier, mat and pad type foundations that are installed with a grounding grid, below grade before back filling occurs.

Table II.3-25
Description of Activities Associated with Geothermal Energy Generation

Activity	Description
Well-field facilities	Well-fields consist of multiple injection and production wells situated on concrete pads that hold all the equipment necessary to operate a well. Geothermal production fluid pipelines and injection fluid pipelines run throughout the well-field to circulate steam and fluids between the well-field and the generation site. Piping is extensive throughout the well-field, with a 50 MW facility requiring between 7–10 miles of co-located pipelines. Well-fields can be extensive and occupy the bulk of the affected acreage for a geothermal facility. The total affected area for a geothermal facility is estimated at 5 acres per MW. For a 50 MW facility the affected area would be about 250 acres.
Generation facilities	For the purposes of analysis, all generation facilities are assumed to be co-located on a single cleared and graded site. Construction of the central energy production facilities includes power generation units, fluid pressure vessels, vapor recovery units, cooling facilities, and regenerative thermal oxidizer scrubbers. For the purposes of analysis, the facilities are assumed to occupy 40 acres of graded and cleared land for a 50 MW unit.
Ancillary buildings and general facilities	Permanent operations and maintenance buildings would be constructed utilizing standard building and construction techniques. Ancillary buildings are assumed to be located at a central power plant site, include parking and equipment storage facilities, and would typically occupy 5 acres.
Clearing, staging, parking, construction trailer, and equipment and material storage areas	Temporary construction areas, including laydown yards, on-site construction trailers, material storage, and on-site cement batch plants would require clearing and grading and are assumed to occupy 40–50 acres.
Fencing (temporary and permanent, for both wildlife and security)	Temporary security fencing around laydown yards, on-site construction trailers, material storage, and on site cement batch plants would usually be required. Permanent security fencing would surround the perimeter of the site.
Temporary drainage and erosion control (e.g., diversion channels, retention/detention basins, silt fences, erosion fabrics)	Temporary drainage and erosion control may be required at laydown yards and temporary sites, and would be determined on a project specific basis, and comply with county, state, and federal requirements.
Permanent drainage: conveyance or semi-natural	Culverts and drainage modification may be necessary to divert and control runoff. Drainage systems would be constructed to federal

Table II.3-25
Description of Activities Associated with Geothermal Energy Generation

Activity	Description
	and state standards. It is assumed that permanent drainage management systems would seek to minimize the disruption to natural water flow. Further, the design would minimize areas of direct vegetation removal, stream re-routing, grading, and leveling; and minimize the amount of active stormwater management using channels, ponds, re-routing and man-made channels, and culverts.
Flood control structures	Temporary drainage control may be required at laydown yards and temporary sites including temporary roads, but would be determined on a project specific basis.
Installation of utility services	Utility services would be required for operations and maintenance buildings. Installation may include trenching and backfilling activities, but would seek to use established ROW. Utility services include: • Electric distribution lines, facilities, and interconnects • Sewage facilities/pipelines • Telecommunication lines and facilities • Trash collection and disposal • Water wells or municipal water supply and pipelines
Generator tie lines (gen-ties)	Generator tie lines are sole-use facilities constructed by an electric generator to interconnect and transmit its power to the electric grid. Depending on the size of the generation facility and the substation to which the facility is being connected, these lines can be between 69 and 230 kV. For 50 MW geothermal facilities, generator tie lines would usually be wood or steel 69 kV monopole structures. In some facilities that are closely located to other generation sites a 230 kV line may be shared between different sites. Generator tie line ROW requirements are described as part of transmission impacts because of the possibility that impacts may occur outside DFAs.
Operations and Maintenance Activities	
Steam turbine and generation operations	Steam turbines are driven by the geothermal gradients to produce electricity. The operational impacts of geothermal plants are dependent on the technology and the cooling system being used being used. Closed loop systems using wet cooling technology may require significant quantities for water for cooling. Cooling towers for closed loop wet cooling facilities can use up to 110 AFY/MW, such as the East Brawley facility in Imperial County.

Table II.3-25
Description of Activities Associated with Geothermal Energy Generation

Activity	Description
	Other facilities, using flash plant and hybrid or dry cooling technologies may use considerable less water, such as the 2.37–3.83 AFY/MW for Black Rock 1, 2, 3 Geothermal Power Project, Imperial County.
Dust suppression	Includes any activities required to reduce fugitive dust as the consequence of plant operation that would be undertaken on an as needed basis following standard industry best management practices. Activities include water spraying and use of chemical suppressants.
Fire and fuel management	Fire fuel load management would be undertaken on an as needed basis following standard industry best management practices that minimize impacts on biological resources to the extent feasible. Vegetation management undertaken to reduce fire risk within transmission ROW would be necessary.
Integrated pest management, including trapping and regulated use of pesticides	Pesticides may have to be applied during the operation of a project to control pests and weeds. Such applications must comply with the Federal Insecticide, Fungicide, and Rodenticide Act and state equivalent requirements. In addition, energy sites are subject to federal provisions to control noxious weeds and invasive species. They may be subject to regulations governing state-established control areas. Use on BLM would comply with terms ROW.
Cleaning, maintenance, repair, and replacement of access roads and spur road.	Cleaning, repair, and maintenance would be undertaken on an as needed basis following best management practices and additional guidance on a project-by-project basis.
Cleaning and maintenance of facilities	Maintenance, repair, and replacement of generation facilities includes but is not limited to: cleaning, maintenance, repair, and replacement of metrological stations; cleaning, maintenance, repair, and replacement of lines/pipelines and facilities, including those used for utility services; cleaning, maintenance, repair, replacement, and repainting of buildings/structures (including towers/poles); fence repair and replacement. Cleaning and maintenance would be undertaken on an as needed basis following standard industry best management practices and additional guidance assessed on a project by project basis. Activities are assumed to be undertaken within the boundary of already disturbed areas. Maintenance of flood control structures would be undertaken on an as needed basis following standard industry best management practices that minimize impacts on biological resources to the extent feasible.

Table II.3-25
Description of Activities Associated with Geothermal Energy Generation

Activity	Description
Hazardous materials treatment and disposal	Disposal of hazardous waste would be undertaken on an as needed basis following standard industry best management practices that minimize impacts on biological resources to the extent feasible.
Night lighting	Lighting would be installed throughout the project sites for site for security and nighttime use of facilities. It is assumed that lighting management would be undertaken following standard industry best management practices that project lights downwards to minimize impacts on sensitive biological resources to the extent feasible.
Solid waste disposal	All solid waste disposal is assumed to be off site at a facility permitted to handle such waste.
Decommissioning	
Removal of structures	Decommissioning would involve removal of all aboveground facilities and gravel workpads and roads. Subsurface facilities (grounding rods and grids, tower and building foundations, natural gas pipelines, etc.) would be removed to a minimum depth of 3 feet from the surface and otherwise abandoned in place. Laydown areas, each nominally 3 acres in size, would be established to support decommissioning; some may be located on the laydown areas used during construction. Dismantled components would be staged at laydown areas for only as long as necessary to arrange for their removal to disposal, reclamation, or recycling facilities.
Restoration and re-vegetation	All spills and contaminated soils would be remediated. All gravel packs would be removed. Reclamation of generation facilities laydown areas, substations, access roads, and other "deconstruction" areas would commence immediately upon completion of the dismantlement of the system.

Notes:
kv = kilovolts; AFY = acre-feet per year; MW = megawatts

For the Preferred Alternative, the area available to geothermal development is limited to areas in the Imperial Borrego Valley and part of the Owens River Valley ecoregion subareas where geothermal resources are concentrated.

Geothermal projects would be more limited in size (in the Plan Area) than other renewable energy projects. Recent projects vary from about 50 MW to 160 MW. For analysis within the DRECP, geothermal projects were assumed to be typically 50 MW in size. Given the programmatic nature of the Plan extensive detailed analysis of effects that are project

specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the acreage that would be affected by geothermal energy generation within each ecoregion subarea of the Plan Area.

Geothermal projects result in extensive impacts associated with the power block and ancillary facilities, with more dispersed impacts resulting from the well-fields. Well heads that inject and collect heat transfer fluids, are widely spaced and connected by permanent access roads and pipelines to the centrally located power block and steam turbine facilities. All land within the boundary of a geothermal project was assumed permanently disturbed by project activities. Estimates of disturbed acreage include the acreage required for well head pads, roads, ancillary facilities, and supporting infrastructure, and also includes the land fragmented by the roads, pipelines and well pads in the well-field, which was assumed to retain no conservation value. Short-term construction activities, such as laydown yards, were assumed to result in permanent disturbance within the project boundary, and are also included in the estimate of permanently disturbed acreage. Table II.3-26 summarizes the long-term impacts for geothermal technologies, and provides the following information by ecoregions:

- **Estimated Long-Term Ground Disturbance**. Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of all potential geothermal generation facility footprints, including operations and maintenance building, switchyard, and road construction impacts, plus the additional impacts that occur as a consequence of construction activities, and the fragmented land within the well-field. Due to the difficulty of restoration in an arid environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.
- **Total Project Area**. An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area (e.g., geothermal energy generation), the permanent impacts are distributed over a larger area.

Table II.3-26
Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Preferred Alternative

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	—	—	—
Imperial Borrego Valley	17,000	6,000	1,000
Kingston and Funeral Mountains	—	—	—
Mojave and Silurian Valley	—	—	—

Table II.3-26
Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Preferred Alternative

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Owens River Valley	1,000	1,000	—
Panamint Death Valley	—	—	—
Pinto Lucerne Valley and Eastern Slopes	—	—	—
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	—	—	—
West Mojave and Eastern Slopes	—	—	—
Total	**17,000**	**7,000**	**10,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.3.1.4.4 Transmission

New or modified/expanded transmission facilities would be necessary for implementation of renewable generation projects in the Plan Area. Transmission facilities would generally include transmission lines, access roads, and substations.

Transmission Lines (including Generator Tie Lines)

Extending or expanding a transmission line may require acquisition and/or expansion of ROW. Covered transmission line activities would generally occur within an existing ROW, but in some cases access roads may be located outside of the designated ROW. Support structures for transmission lines may include lattice steel towers, wood poles, steel monopoles, and transition structures that are specially designed support structures for changing line direction and terminal or "dead-end" line features. Foundations and guy wires may be part of the support structures. In addition, safety features, such as aerial marker spheres and aircraft warning lighting, may also be required. Although extensive use of underground transmission facilities may not be practicable, underground facilities, such as transmission lines, duct banks, and splice vaults, are also included as Covered Activities. Transmission facilities would also require access and spur roads for both construction and operation/maintenance.

For the purpose of analysis, all acreage within a given ROW was assumed to be affected by transmission construction and operation impacts, which incorporates the individual effects

of activities such as tower footprints, laydown yards, pulling sites, and access roads. A Transmission Technical Group (TTG) was convened to identify potential transmission lines that could connect renewable energy generation in the Plan Area to load centers. See Appendix K for the report completed by the TTG. As part of this effort, the TTG developed assumptions for standard transmission components. Transmission line length and width are based on the approximate distance (length) to substation locations and the ROW (width) requirements. Access road length and width are based on the size of the substation, the length of the transmission line, and standard construction methods. Each 230 kV and 500 kV line is assumed to require a permanent access road. The use of helicopters to install transmission lines may reduce the need for access roads in certain situations. Table II.3-27 below provides the typical characteristics of standard bulk transmission components that the TTG used to calculate the acreage of impacts required for new transmission lines.

Table II.3-27
Typical ROW Widths and Linear Impacts of Bulk Transmission

Transmission Line Voltage	Transmission ROW Corridor Width (feet)	Access Road Width (feet)	Impact Extent for 1 Linear Mile (Acres)
34.5 and 66 kV			
Double Circuit Tower Line	30	N/A	3.6
230 kV			
Double Circuit Tower Line	100	24	15
500 kV			
Single Circuit Tower Line	200	24	27
Two Single Circuit Tower Lines	450	24	57
Three Single Circuit Tower Lines	700	24	88
Four Single Circuit Tower Lines	950	24	118

Notes:

- ROW spacing is based on Western Electricity Coordinating Council adjacent circuits definition in order to avoid credible N-2 contingency considerations for lines operated above 300 kV.[3]
- Access road width is added to ROW width for total width of linear disturbance.

Substations and Switchyards

Substations and switchyards are hubs for electrical power sources, and provide a junction and control power flow between the generation facilities and the transmission lines in the area. Substations and switchyards typically contain transformers, shunt capacitors,

[3] http://www.wecc.biz/library/Documentation%20Categorization%20Files/Regional%20Criteria/TPL-001-WECC-CRT-2%20System%20Performance%20Criterion%20-%20Effective%20April%201%202012.pdf and http://www.wecc.biz/library/WECC%20Documents/Publications/WECC%20Glossary%2012-9-2011.pdf.

breakers, disconnect switches, protective relays, metering and Supervisory Control and Data Acquisition system equipment, emergency power generators, fire prevention systems (including hydrants, water tanks, and walls between transformer phases), relay/ control shelters, storage buildings, oil and chemical containment systems, and communications facilities. Telecommunication lines are often required for substations and are often, but not always, strung on transmission structures.

A new or expanded substation may require ground disturbance to accommodate additional transformers, new distribution line outlets, and possibly new fencing for safety and security. Substation sites are typically graded, paved, or surfaced with hardscape. Table II.3-28 describes the sizes of various types of substations. Outside of the Plan Area, only 500/230 kV collector substations are proposed.

Table II.3-28
Typical Substation Size

Substation Type	Description	Size (Acres)
66 kV Collector Substation	Receiving transmission from generators or from smaller collector substations. Serves as the receiving point for 66 kV collector transmission lines	39 acres
230/66 kV Collector Substation	Serves as the receiving point for both 230 and 66 kV collector transmission lines	77 acres
500/230 kV Collector Substation	Serves as the receiving point for 500 kV and 230 kV collector lines and 230/66 kV collector substations	176 acres
500/230/66 kV Super Collector Substation	The largest and most flexible substation, as it can serve as the receiving point for 500 kV, 230 kV, and 66 kV collector lines and 230 and 500 kV lines that connect this facility to the bulk electric grid	215 acres

Table II.3-29
Description of Activities Associated with Transmission, Substations, and Generator Tie Lines

Activity	Description
Initial (Pre-Construction) Activities	
Geotechnical borings	Full geotechnical testing to establish the suitability of the site for construction would vary depending on the size of transmission facilities needed.
Temporary access routes and staging areas for geotechnical borings	Temporary vehicular access to undertake pre-construction activity may result in unusual vehicular disturbance but generally, access corridors would be identified. This would include utilizing existing tracks and roadways where possible.

Table II.3-29
Description of Activities Associated with Transmission, Substations, and Generator Tie Lines

Activity	Description
Site reconnaissance (including species-specific surveys)	Site surveyors would utilize the existing roads, tracks and access or may assess the areas on foot.
Construction	
Access roads/spur roads (permanent and temporary)	33kV to 69kV Power Lines - no permanent road is assumed to be constructed adjacent to the transmission ROW. 220-500kV Transmission Lines - Construction of a permanent road within the ROW would allow access for construction and subsequently maintenance inspections and repair. Roads would typically run along the ROW, and consist of compacted gravel surface assumed to be no more than 24 feet wide. Helicopters could be used for construction reducing the need for access roads
Ground-disturbance activities (including grading and clearing vegetation)	Grades within tower construction/erection areas would be made level to facilitate lifting-equipment placement and operation If helicopters are used for construction tower staging access pads would be required and may be graded
Site preparation (e.g., excavation for foundations)	Tower foundations would be constructed in accordance with sound engineering practice and in consideration of local conditions. Foundations for towers would be installed at a nominal depth of 14 to 35 feet, after consideration of climate and local soil and subsurface conditions. At least four such foundations would be required for each typical lattice-type tower, while only one foundation would be required for each monopole tower; however, the monopole foundation typically would be deeper (by as much as 20%) and wider than the corresponding dimensions of a lattice tower's foundation installed in the same subsurface conditions. Foundations would likely utilize steel-reinforced annular concrete rings of nominal widths of 4 feet and nominal thicknesses of 8 inches, the centers of which would be backfilled with indigenous soils. Substations and switchyards would be located near the mainline ROW; expansions to ROW dimensions would be made to accommodate such essential facilities when necessary. Substations are assumed to include land that allows for the permanent location of transformers and operations and maintenance facilities as well as a surrounding buffer of land to allow for the orderly organization of transmission lines that

Table II.3-29
Description of Activities Associated with Transmission, Substations, and Generator Tie Lines

Activity	Description
	intersect at the substation. In total, the acreage of land required for a substation varies between 77–215 acres including the surrounding transmission buffer. Substation facilities would be underlain with grounding grids generally extending over the entire ground extent of the substation; in arid areas, grounding grids may need to extend beyond the substation footprint or, alternatively, wells would be drilled to the nearest aquifer for the purpose of establishing adequate electrical ground.
Tower Construction (220 kv and 500 kV lines)	Tower construction/erection activities include tower construction and cable stringing and pulling. Typically, each tower would require an assembly area of at least 100 feet by 200 feet, resulting in approximately 0.23 acre/mile of short term impacts. Lattice towers would require at least 80,000 square feet per tower for construction. For cable pulling activities two cable-pulling sites of 37,500 square feet each (150 feet by 250 feet) would be needed for each section under construction. The affected acreage associated with these activities are included within the overall ROW estimates and disturbance assumed by the TTG.
Clearing, staging, parking, construction trailer, and equipment and material storage areas	Temporary construction areas include laydown yards, on-site construction trailers, and material storage. o Laydown areas would be maintained free of vegetation throughout the construction period for fire safety. o Minimal grade alterations would be made. o Temporary roads would be constructed for access to laydown areas by haul vehicles. Laydown areas for substations would be located entirely within the footprint granted in the lease for the substation. o Laydown areas would not be used for long-term storage of equipment or materials (except that such storage would occur at substations). o Laydown areas would be reclaimed at the end of the construction period, or as soon as the need for each laydown area has ended. o Already disturbed areas would be used as laydown areas when available.

Table II.3-29
Description of Activities Associated with Transmission, Substations, and Generator Tie Lines

Activity	Description
Fencing (temporary and permanent, for both wildlife and security)	Temporary security fencing would be installed around laydown yards, on-site construction trailers, material storage. Permanent security fencing would be required around substations.
Temporary drainage and erosion control (e.g., diversion channels, retention/detention basins, silt fences, erosion fabrics)	Temporary drainage and erosion control may be required at laydown yards and temporary sites, and would be determined on a project specific basis, and comply with county, state and federal requirements.
Permanent drainage: conveyance or semi-natural	Culverts and drainage modification may be necessary to divert and control runoff from road ways. It is assumed that such drainage systems would be constructed to federal and state standards.
Flood control structures	Temporary drainage control may be required at laydown yards and temporary sites including temporary roads, but would be determined at the on a project specific basis.
Operation and Maintenance	
Cleaning, maintenance, repair, and replacement of access roads and spur road, including trimming/removal of native vegetation growing in roadways	Cleaning repair and maintenance would be undertaken on an as needed basis following standard industry best management practices and guidance laid down on a project-by-project basis. Line re-conducting activities would require laydown areas and cable pulling sites similar to construction activities.
Cleaning and maintenance of transmission line	Biannual Transmission line inspection and insulator cleaning would take place either via vehicle or helicopter.
Hazardous materials treatment and disposal	Disposal of hazardous materials would be undertaken on an as needed basis following standard industry best management practices that minimize impacts on biological resources to the extent feasible. Substations transformers, capacitors, switches, bushings, and other electrical devices typically containing dielectric fluids would be free of polychlorinated biphenyls. Electrical equipment containing liquid dielectric fluids would be installed within adequate secondary containment features.
Vegetation management and weed/pest control including fire hazard/fuel management/clearing	Vegetation management and weed control would be undertaken to reduce fire risk. Clearance of and fuel management with power/transmission ROWs would be subject to California Public Utilities Commission, General Order 95 (CPUC GO 95)[1]

Table II.3-29
Description of Activities Associated with Transmission, Substations, and Generator Tie Lines

Activity	Description
Decommissioning	
Removal structures	Decommissioning would involve removal of all aboveground facilities and gravel workpads and roads; subsurface facilities (grounding rods and grids, tower and building foundations, natural gas pipelines, etc.) would be removed to a depth of 3 feet belowground surface and otherwise abandoned in place. Laydown areas, each nominally 3 acres in size, would be established to support decommissioning; some may be located on the laydown areas used during construction. Dismantled components would be staged at laydown areas for only as long as necessary to arrange for their removal to disposal, reclamation, or recycling facilities.
Restoration and re-vegetation	All spills and contaminated soils would be remediated. All gravel packs would be removed. Reclamation of generation facilities laydown areas, substations, access roads, and other "deconstruction" areas would commence immediately upon completion of the dismantlement of the system.

[1] This General Order controls the construction and operational safety of transmission facilities. It specifies the amount of clearance that is required between transmission facilities and encroaching vegetation, either to ensure that lines aren't affected by vegetation or to reduce the fire risk.

Major Transmission Infrastructure

The subarea distribution of transmission infrastructure described in Table II.3-30 provides an estimate of the disturbance Area of transmission related construction and operation activities.

- **Estimated Long-Term Ground Disturbance**. Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of transmission impacts. This estimate also includes impacts that occur as a consequence of construction activities, including construction areas, laydown yards, and storage facilities. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.

- **Total Project Area**. An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area, the permanent impacts are distributed over a larger area.

Table II.3-30
ROW Requirements for Transmission Associated with the Renewable Energy Development by Ecoregion Subarea – Preferred Alternative

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	13,000	8,000	5,000
Imperial Borrego Valley	12,000	3,000	9,000
Kingston and Funeral Mountains	—	—	—
Mojave and Silurian Valley	1,000	600	500
Owens River Valley	400	200	200
Panamint Death Valley	—	—	—
Pinto Lucerne Valley and Eastern Slopes	4,000	1,000	2,000
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	400	200	200
West Mojave and Eastern Slopes	2,000	300	2,000
Total	**33,000**	**14,000**	**18,000**

Notes: All transmission disturbance data reflect intermediate disturbance values used for comparative purposes in the analysis. Disturbance area estimates reflecting the most recent TTG Report are provided in Appendix K.
The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

ROW requirements do not include those outside of the Plan Area that are shown in Section II.3.1.4.4.1.

II.3.1.4.4.1 Transmission Outside the Plan Area

Transmission outside the Plan Area that would be required to deliver renewable electricity from the DRECP to load centers is part of the DRECP project for purposes of CEQA and NEPA, and impacts of this transmission are being analyzed along with other project impacts. Transmission outside the Plan Area is not, however, a Covered Activity under the NCCP, GCP, or LUPA components of the DRECP. The potential effects of potential future transmission outside the Plan Area associated with development of covered renewable energy projects and transmission facilities inside the Plan Area are programmatically described and analyzed in Volume IV of the DRECP for each

environmental resource category. This section presents a description of the transmission facilities outside the Plan Area.

As discussed in Section I.3.5.7, the transmission planning process identified the necessary transmission system facility additions to accommodate the 20,000 MW of renewable generation that could be developed in the 2040 timeframe. The basic assumptions used to define impacts of transmission components included consideration of all transmission lines that are likely to be required to interconnect DRECP renewable energy projects to the load centers, outside of the Plan Area. Because the load centers that would use the electricity generated by desert renewables are outside of the DRECP boundary, the TTG identified linear miles and acreages of effects associated with transmission outside of the DRECP boundary.

While the DRECP will not serve as a permitting streamlining mechanism for actions outside of the Plan Area, the development within the Plan Area will drive the need for new transmission development outside the Plan Area. Therefore, to present a complete picture of the effects driven by renewable energy development for CEQA and NEPA purposes, the EIR/EIS describes the potential transmission lines outside the Plan Area and analyzes the effects of these transmission lines. The TTG Report presents locations of transmission lines on maps for each alternative (see Appendix K), but only to allow general descriptions of environmental impacts that could be expected. No specific transmission routes or upgrades outside the Plan Area have been defined at this time.

The assumptions used to calculate acreages of effects for transmission and substation facilities inside the Plan Area are the same as those used to calculate effects of transmission and substations outside the Plan Area and are described in Section II.3.1.4.4. However, approval of the DRECP would not result in any approval of potential future transmission lines outside the Plan Area. All future transmission lines outside of the Plan Area would require new applications by the applicant or utility, compliance with NEPA and CEQA as appropriate, and approvals from the developer (if municipal utilities or irrigation districts) or from the California Public Utilities Commission (if investor-owned utilities) prior to construction. In contrast to transmission facilities within the Plan Area, transmission projects outside the Plan Area would not derive take authorization for state or federally protected species from the DRECP, nor would the DRECP prescribe avoidance, mitigation, or conservation measures for those projects.

Table II.3-31 provides the estimated acreage of effects for likely future transmission and substations outside of the DRECP boundary. For ease of analysis, future transmission lines and substations have been clustered into general geographic boundaries.

Table II.3-31
ROW Requirements for Transmission Outside the Plan Area Associated with Renewable Energy Development – Preferred Alternative

Geographic Area	Transmission	
	Acres	*Miles*
San Diego	2,000	94
Los Angeles	2,000	83
Central Valley	12,000	274
Rialto/Moreno Valley/Devers	12,000	484
Total Outside Plan Area	**29,000**	**782**

Source: See Appendix K, TTG Report.
Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

The potential new transmission lines outside the Plan Area are listed below.

- **San Diego Area:** One 500 kV line from the Imperial Valley Substation to the existing Sycamore Substation (San Diego).
- Los Angeles Area:
  - One 500 kV line from the existing Vincent Substation (just inside the DRECP boundary) to the existing Lighthipe Substation.
  - One 500 kV from the existing Vincent Substation (just inside the DRECP boundary) to the existing Mesa Substation.
  - One Mead, 500 kV Station 6 to Station 7.
- Central Valley:
  - One 500 kV transmission line from the Whirlwind Substation (just inside the DRECP boundary) to the PG&E Midway 500 kV Substation.
  - Two 500 kV lines from the PG&E Midway Substation to the Tesla/Tracy Substation.
- Rialto/Moreno Valley/Devers Area:
  - One 500 kV line from the Devers to Vincent Substation.
  - One 500 kV lines from Devers to Rancho Vista Substation.
  - One 500 kV line from Colorado River Substation to existing Valley Substation. About 103 miles of this line would be outside the DRECP boundary.
  - Three 500 kV lines from Midway X (Imperial Valley) to Devers Substation. About 200 miles of this corridor would be outside the DRECP boundary.

II.3.1.4.5 Conservation Activities

Covered Activities would also include conservation activities associated with the implementation of avoidance, minimization, compensation, monitoring, and adaptive management (e.g., surveying activities, habitat enhancement activities, monitoring activities). The activities necessary to implement the avoidance, minimization, and compensation CMAs described in Section II.3.1.2.5 may result in the incidental take of Covered Species and would be considered Covered Activities under the DRECP. Monitoring and adaptive management activities implemented pursuant to the MAMP described in Section II.3.1.3 may also result in the incidental take or take for scientific purposes of Covered Species and would be considered Covered Activities under the DRECP.

II.3.1.5 Plan Implementation

II.3.1.5.1 Overview

This section includes the following:

- Implementation structure
- Integrated project proposal review process
- Review process for projects seeking streamlining under the DRECP
- DRECP biological conservation and mitigation and reserve assembly
- Information management
- Annual reporting
- Modifications and amendments

II.3.1.5.2 Implementation Structure

II.3.1.5.2.1 Introduction

This section describes the institutional structure and organizational arrangements that will be established to implement the DRECP and sets out the roles, functions, and responsibilities of the various entities that will participate in DRECP implementation (see Exhibit II.3-8). The implementation structure will ensure that institutional expertise, capacity, resources and focus are brought to bear to accomplish the goals and objectives of the DRECP, and that the decision-making process regarding Plan implementation is transparent and understandable.

The implementation structure for the DRECP must take account of each of the various roles and responsibilities that are integral to the successful implementation of a GCP, NCCP and

LUPA and explain which entities will fill them. The roles and responsibilities integral to DRECP implementation include:

- Ensuring coordination among participating agencies and entities and facilitating coordinated decision-making.
- Program administration, including staffing, facilities, data management, and document management.
- Securing and managing funding.
- Implementation of conservation actions, including but not limited to
  - Land acquisition
  - Non-acquisition conservation actions
  - Land stewardship
  - Monitoring and adaptive management
- Determining for each covered project how and/or if the DRECP's programmatic, Plan-wide avoidance, minimization and mitigation measures are being appropriately applied and implemented.
- Compliance monitoring and enforcement.
- Facilitating independent science input.
- Coordination with federal, state, and local agencies that are not DRECP participants but whose actions could affect or be affected by DRECP implementation.
- Tribal coordination and outreach.
- Coordination and outreach with the Department of Defense installations in the Plan Area.
- Coordination of DRECP actions with complementary non-DRECP actions implemented within and immediately surrounding the Plan Area.
- Obtaining stakeholder input.
- Public outreach.

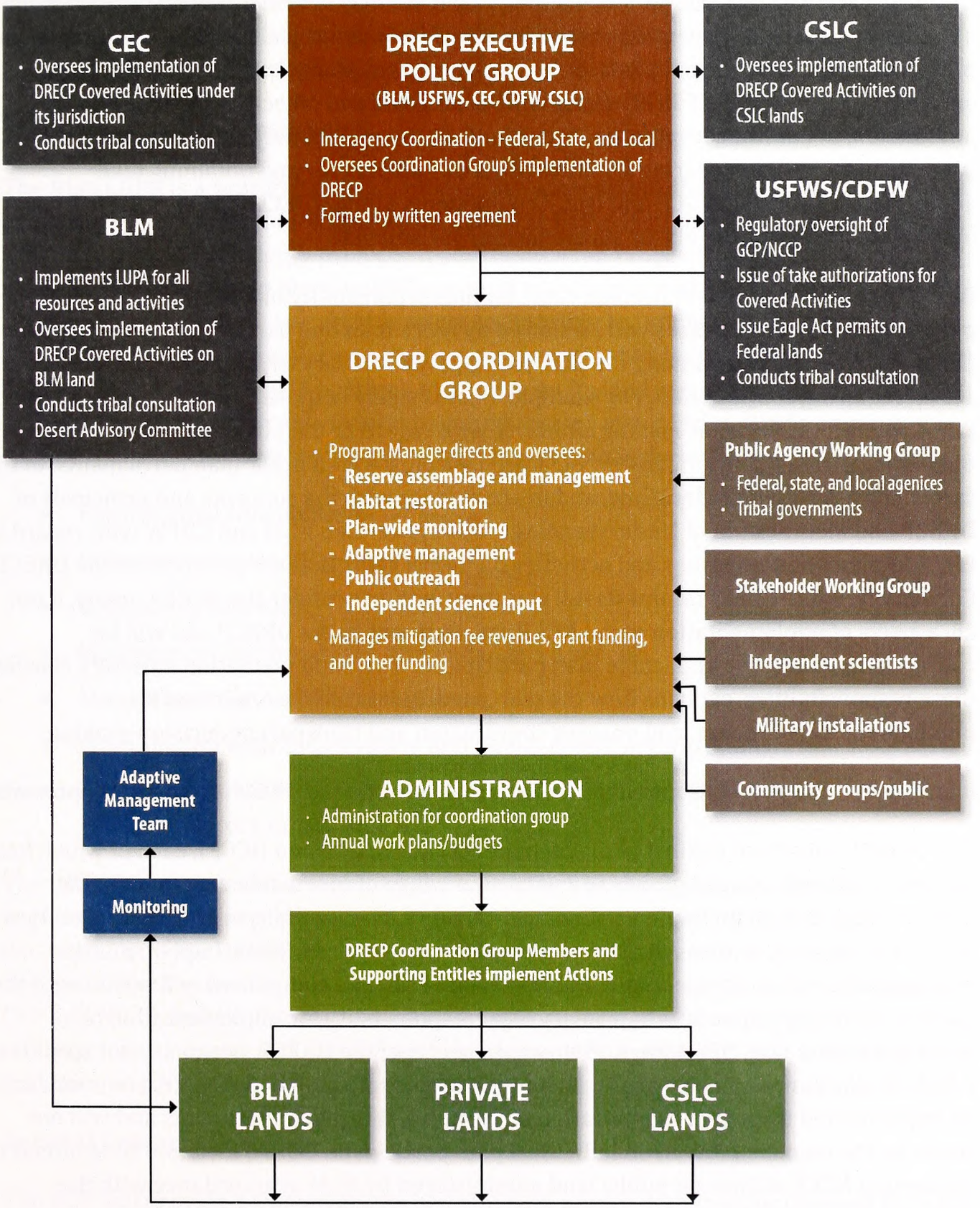


Exhibit II.3-8 DRECP Implementation Structure

Initially, the entities that participate in DRECP implementation will be BLM, USFWS, CEC, CSLC and CDFW. Other federal, state, or local agencies may later become plan participants by developing and implementing conservation plans, land use plans, resource management plans, resource management plans, or land management plans that tier from the DRECP and help to achieve DRECP BGOs along with other goals and objectives within their jurisdiction. In addition, local governments and state agencies may become plan participants without preparing separate plans by applying for and obtaining take authorizations under the GCP and NCCP components of the DRECP for Covered Activities under the local governments' or state agencies' jurisdiction.

DRECP implementation will in some cases be the responsibility of a particular plan participant and in some cases will be shared by more than one participant. The scope and purpose of coordination among the plan participants will vary depending on the role or action requiring coordination. For example, BLM is solely responsible for implementing the LUPA and retains decision-making authority with regard to the LUPA and any actions on BLM-administered lands. However, BLM will coordinate with other plan participants, to the extent consistent with federal law, and in accordance with the concepts and principals of DRECP and Memoranda of Understanding (MOUs) between BLM and CDFW with regard to LUPA implementation issues and activities on public lands that are pertinent to the DRECP. Conversely, while CDFW retains its full statutory authority under the NCCPA, many, if not all, aspects of implementation of the NCCP are pertinent to the DRECP and will be coordinated among the applicable plan participants. The implementation structure clarifies these responsibilities, explains how the plan participants will be organized for implementation purposes, and ensures coordinated and transparent decision-making.

II.3.1.5.2.2 Roles and Responsibilities for Implementation of DRECP Planning Components

The DRECP consists of distinct plan components (LUPA, GCP and NCCP), each of which has its own geographic scope, applies to a particular range of renewable energy and other projects (e.g., federal vs. nonfederal, solar thermal vs. photovoltaic, mining and recreation on BLM lands, etc.), and has distinct implementation responsibilities. Implementation responsibilities that are specific to a particular DRECP plan component will reside with the participant or participants with primary legal responsibility for implementation or oversight of that plan component. Plan-wide aspects of the DRECP, which are not specific to a DRECP plan component, or are included in their entirety only in the NCCP, are intended to be implemented through a collaboration of the applicable plan participants and will not solely be the responsibility of an individual plan participant. CDFW, CEC, and BLM intend to implement NCCP actions on public land administered by BLM in accordance with the concepts and principles of the DRECP, federal law and the MOUs.

Examples of Plan-wide aspects or programs in the DRECP include monitoring and adaptive management, land acquisition, and public outreach. Notwithstanding this collaboration, all agencies retain complete decision-making authority under their respective laws and regulations.

BLM Land Use Plan Amendment

The BLM LUPA is a comprehensive land use plan amendment that applies to specified activities on public land administered by BLM within the Planning Area, including, but not limited to, renewable energy projects. It addresses a full range of impacts, including, but not limited to, impacts to plant, wildlife, natural community, recreation, and cultural resources. Under federal law, BLM is solely responsible for implementation of the LUPA, and all activities that take place on BLM-administered public lands will ultimately require BLM authorization. BLM will continue to implement its land use plans, as amended by the LUPA, according to applicable federal laws, regulations and policies. BLM's ongoing responsibilities regarding land use plan implementation include, among other things:

- Formal tribal consultation.
- Protection of cultural properties.
- Community outreach.
- Management for threatened and endangered species.
- Management for recreation resources.
- Coordination with conservation and management organizations.
- Implementation of the California Desert Advisory Committee chartered under the Federal Advisory Committee Act.

The DRECP implementation structure does not affect BLM's decision-making authority or implementation responsibilities with regard to its land use plans. Instead, BLM's participation in the DRECP implementation structure will be to inform its land use decisions, ensure coordination of land use plan implementation with implementation of the GCP and NCCP, build collaborative and synergistic on-the-ground implementation strategies, and support and participate in implementation of DRECP Plan-wide programs, such as monitoring and adaptive management, and the Plan-wide conservation strategy.

General Conservation Plan

The GCP will provide a framework for streamlining permit decisions for Covered Activities under Section 10 of the federal ESA. The GCP is an "umbrella" or programmatic HCP that the USFWS is developing to provide a detailed framework and guidance that local governments, state agencies, and private entities can use to apply for project-level

incidental take permits resulting from Covered Activities. In addition, if issued a permit under the GCP, a state agency or local government would be able to extend its incidental take authorization to qualified third-party project proponents for Covered Activities over which the agency or local government has jurisdiction. The CEC and CSLC have applied for incidental take permits under the GCP that would enable them to extend incidental take authorization to Covered Activities over which they have jurisdiction.

The GCP does not apply to projects that will be carried out on federal lands. However, it is based on the DRECP's comprehensive conservation strategy and will implement the strategy within the GCP Permit Area. The USFWS's participation in the DRECP implementation structure will inform its permitting decisions and regulatory actions under the GCP, ensure that implementation of the GCP is coordinated with implementation of the LUPA and NCCP, build collaborative and synergistic on-the-ground implementation strategies, and support and participate in implementation of DRECP Plan-wide programs.

Natural Community Conservation Plan

Similar to the GCP, the DRECP NCCP will provide a detailed framework and guidance that public and private entities can use to apply for incidental take authorizations for Covered Activities pursuant to Section 2835 of the California Fish and Game Code. If issued a permit under the NCCP, a state agency or local government would be able to extend its take authorization to qualified third-party project proponents for Covered Activities over which the agency or local government has jurisdiction. The CSLC has applied for a take authorization under the NCCP that would enable it to extend take authorization to qualified third-party project proponents for Covered Activities on CSLC lands.

Unlike the GCP, the NCCP can cover projects that will be carried out on federal land or otherwise have a federal nexus. The NCCP is the only planning component of the DRECP that encompasses the entire Plan Area.

The NCCP conservation strategy is intended to provide for the conservation and management of Covered Species and to conserve habitat necessary to maintain the continued viability of biological communities impacted by human changes to the landscape. Under the NCCPA, the CDFW has sole responsibility for approving the NCCP and any future NCCP amendments, and sole authority and responsibility for permitting decisions based on the NCCP (except for permitting decisions by the CEC, as explained below).

The NCCP also establishes Plan-wide programs intended to conserve Covered Species and natural communities at the ecosystem scale, while accommodating Covered Activities and other compatible land uses. All Plan-wide DRECP programs are elements of the NCCP. CDFW's participation in the DRECP implementation structure will be for the purpose of informing its permitting decisions and regulatory actions under the Plan-wide NCCP,

ensuring that implementation of any subarea NCCPs developed under the DRECP and any project-specific Section 2835 take authorizations under the Plan-wide NCCP is coordinated with implementation of the LUPA and GCP, and supporting, participating in, and overseeing implementation of Plan-wide programs.

CEC Take Authorization Requirements

Under the Warren-Alquist Act, CEC has exclusive authority under California law to approve (license) energy facilities that are thermal power plants with a generating capacity of 50 MW or more, related facilities (e.g., natural gas pipelines, water lines, tanks, etc.), and certain electric transmission lines. This exclusive authority gives the CEC sole authority and responsibility for licensing decisions under California law, including the authority to authorize take in conformity with the terms of an approved NCCP without separate Section 2835 take authorizations from CDFW.

As a permittee under Section 10(a)(1)(b) of the ESA, the CEC will be responsible for complying with the terms and conditions of its federal incidental take permit, which will include a requirement to implement actions consistent with the GCP, and a requirement that any extension of incidental take authority to individual Covered Activities under CEC jurisdiction must be consistent with the GCP. The USFWS will oversee and enforce CEC's implementation of the permit's terms and conditions. CEC's participation in the DRECP implementation structure will be to inform its licensing decisions under its incidental take permit and the NCCP, and to support and participate in implementation of Plan-wide programs.

CSLC Take Authorization Requirements

As a permittee under Section 10(a)(1)(b) of the ESA and Section 2835 of the Fish and Game Code, the CSLC will be responsible for complying with the terms and conditions of both permits, which will include a requirement to implement actions consistent with the GCP and NCCP, and a requirement that any extension of incidental take authority for take resulting from project-level, site-specific Covered Activities on CSLC lands must be consistent with the GCP and NCCP. The USFWS and CDFW will enforce the terms and conditions of each take authorization. The CSLC's participation in the DRECP implementation structure will be to inform its leasing decisions under its incidental take authorizations, and to support and participate in implementation of Plan-wide programs.

II.3.1.5.2.3 DRECP Executive Policy Group

The DRECP Executive Policy Group will ensure coordination among DRECP plan participants regarding implementation of each of the planning components of the DRECP, oversee coordination among local, state and federal governments for all DRECP matters,

and provide policy-level support and oversight of implementation of Plan-wide programs. The California Governor's Office and the U.S. Department of the Interior will form the Executive Policy Group through a written agreement upon approval of the DRECP. The DRECP Executive Policy Group will replace the Renewable Energy Policy Group convened under the October 12, 2009, memorandum of understanding between the State of California and the Department of the Interior.

Membership of the Executive Policy Group

Members of the Executive Policy Group will include:

- A senior designee of the Governor.
- A senior designee of the Secretary of the Interior.
- The California Director of BLM.
- The Regional Director of USFWS.
- A CEC Commissioner.
- The Director of CDFW.
- The Executive Officer of CSLC.

If any public agency prepares a land use or natural resources plan that tiers from and will implement the DRECP, it will be invited to be a member of the Executive Policy Group once the plan is approved. In addition, if a local government enters into a Planning Agreement pursuant to the NCCPA to prepare a regional NCCP and apply for incidental take permits directly under the GCP that tier from and will implement the DRECP, it will be invited to be a member of the Executive Policy Group once the Planning Agreement takes effect.

Role of the Executive Policy Group

The Role of the Executive Policy Group will include:

- Policy oversight.
- Coordinating Plan participants regarding DRECP matters (renewable energy and implementation of conservation and mitigation actions).
- Resolution of agency conflicts and policy conflicts that arise from implementation.
- Providing a high-level forum for intergovernmental coordination and cooperation.

Function

The Executive Policy Group will determine the frequency, location and agendas for its meetings. However, the Executive Policy Group will likely meet at least twice per year during the first five years of implementation, and at least annually thereafter.

II.3.1.5.2.4 DRECP Coordination Group

The DRECP Coordination Group will be responsible for the day-to-day implementation of Plan-wide programs, coordination among Plan participants regarding implementation of each DRECP planning component (LUPA, GCP, and NCCP), coordination with public agencies and stakeholders, and public outreach.

The DRECP Coordination Group will be a new interagency and intergovernmental consortium in which the Plan participants collaborate to implement Plan-wide programs. The Coordination Group will not be a new or separate legal entity. Members of the Coordination Group will retain their current authorities and responsibilities. However, they will exercise their separate authorities, and use their staff and other resources, in a deliberate and coordinated way to implement the DRECP.

The Executive Policy Group will form the Coordination Group within six months after the DRECP is approved.

Membership of the Coordination Group

Membership in the Coordination Group will consist of one representative from each of the entities responsible for implementation of DRECP planning components. If local, state, or tribal governments develop regional NCCPs or HCPs that tier from the DRECP and/or receive regional incidental take permits directly under the NCCP or GCP, the new plan permitees will become members of the Coordination Group. The Coordination Group will initially consist of representatives of BLM, USFWS, CEC, CDFW, and CSLC.

If any public agency prepares a land use or natural resources plan, including but not limited to an HCP and NCCP that will tier from and will implement the DRECP, it will be invited to be a member of the Coordination Group once the plan is approved.

Role of the Coordination Group

Based on policies and priorities set by the DRECP Executive Policy Group, the Coordination Group will coordinate and oversee implementation of Plan-wide programs, including the following:

- Advising plan participants how the DRECP's programmatic, Plan-wide avoidance, minimization and mitigation measures will be applied and implemented to individual Covered Activities
- Reserve assembly and management
- Habitat restoration
- Plan-wide monitoring
- Plan-wide management including adaptive management
- Independent science input
- Data management, including updating databases and providing access to plan information
- Funding, including mitigation fee revenues, grant funding and other funding
- Public outreach
- Coordinating with military installations
- Coordinating with stakeholders
- Coordinating with existing conservation and management organizations
- Coordinating implementation of LUPA, GCP, NCCP, CEC Take Authorization, and CSLC Take Authorizations
- Ensuring permit streamlining consistent with DRECP
- Ensuring adequate progress toward implementation of Plan-wide program elements and achieving DRECP BGOs
- Establishing priorities for implementation of Plan-wide program elements
- Determining whether DRECP amendments should be proposed for formal review under the FLPMA, the ESA, or the NCCPA
- Coordinating consultation with tribes

Coordination with Local Governments

The Coordination Group will coordinate with local governments regarding DRECP actions proposed for implementation within the local governments' jurisdiction.

Administration of the Coordination Group

The DRECP Coordination Group must have the capacity and resources to carry out its role. The Coordination Group will have use of an office and support staff. Coordination Group staff will consist of employees of its member agencies assigned to the

Coordination Group, and consultants retained by member agencies to support the Coordination Group as needed.

Program Manager

A Program Manager will report to the Coordination Group and act in accordance with the Coordination Group's direction. The Program Manager will oversee the work of Coordination Group staff, and will manage, coordinate, oversee and report on all aspects of implementation of Plan-wide program elements. The Program Manager will not have supervisorial authority over any staff that are employees of a Coordination Group member agency. However, the Program Manager will coordinate their efforts to implement Plan-wide programs.

The Program Manager will manage and monitor implementation of Plan-wide program elements; oversee the preparation of annual and 5-year work plans, budgets, and reports; and implement public outreach programs. The Program Manager will also coordinate and provide administrative support to the Adaptive Management Team, the Partners Working Group, and the Stakeholder Working Group.

Preparing Annual Work Plans and Budgets and Managing Expenditures

Each year, the Program Manager will prepare an Annual Work Plan and Budget and a 5-Year Budget. The Annual Work Plan and Budget will address matters related to general program administration and implementation of Plan-wide elements. The Program Manager will establish systems and processes to centralize oversight of implementation budgets and expenditures of funds consistent with federal and state laws governing the holding and use of federal and state funds.

Contracting for Services

One or more of the Coordination Group's member agencies, in coordination with other member agencies, may contract for services with public or private entities as necessary or appropriate to implement Plan-wide programs, in a manner consistent with state and/or federal law governing such contracts. Such contracts may be for a range of professional services, including those related to:

- Acquisition and protection of habitat.
- Habitat restoration and management.
- Monitoring and scientific research.
- Environmental and technical services.
- Data management.

The Program Manager will assist the contracting member agency in its administration of any such contracts, as requested by that agency.

Securing, Holding, and Managing Funds to Support Implementation Actions

The Coordination Group will seek to secure adequate funding to implement Plan-wide program elements from state, federal and other sources, as well as from implementation fee revenues. Where appropriate and consistent with federal and state laws governing the holding and use of federal and state funds, the Coordination Group will seek the support of one or more Supporting Entities to serve as a fiscal agent. The Program Manager will coordinate with the fiscal agent to ensure that sufficient funds are available to implement Annual Work Plans.

Regulatory Compliance for Implementation of Conservation Actions

The Coordination Group will be responsible for ensuring that any regulatory authorizations necessary to implement actions under Plan-wide program elements are obtained. For example, a regulatory authorization could be required under the Federal Clean Water Act for wetland or riparian restoration actions. One or more of the Coordination Group's member agencies will serve as the lead agency(ies) for purposes of obtaining regulatory authorizations. The lead agency will identify and prepare the necessary documentation to support the issuance of such regulatory authorizations, in coordination with the Program Manager and other applicable plan participants.

Adaptive Management Team

The Coordination Group will implement the DRECP MAMP after receiving and considering the advice and recommendations of an Adaptive Management Team. The Adaptive Management Team will have primary responsibility for developing and recommending to the Coordination Group MAMP monitoring protocols and standards and for reviewing and analyzing MAMP monitoring data and reports, including effectiveness monitoring and validation monitoring. The Adaptive Management Team will also review and analyze relevant new scientific information regarding Covered Species and natural communities, such as new baseline species surveys, new vegetation mapping, and new scientific research. Based on monitoring data and reports, and other new scientific information, the Adaptive Management Team will provide input to the Coordination Group regarding implementation of the MAMP, including but not limited to developing and recommending appropriate adaptive management actions. The Adaptive Management Team will also advise the Coordination Group when and for what purpose independent scientific review or study would be most useful for implementing the MAMP. The Adaptive Management Team will address technical and scientific issues, not policy issues.

The Adaptive Management Team may assist with, but will not be responsible for, compliance monitoring or project-level monitoring. Compliance monitoring and project-level monitoring will be carried out by each permittee (i.e., each entity, including CEC and CSLC, that receives a take permit under the GCP or NCCP for a Covered Activity) or ROW holder (i.e., each entity that receives that receives a grant of ROW from BLM for a Covered Activity) in accordance with the terms and conditions of its permit(s) or ROW grant. The Adaptive Management Team may also assist with land use plan monitoring, but BLM will retain primary responsibility for monitoring implementation of its land use plans. BLM and the Adaptive Management Team will coordinately closely regarding BLM's monitoring of its land use plans and MAMP effectiveness monitoring for purposes of measuring progress toward achieving the BGOs.

Adaptive Management Team Membership

The Adaptive Management Team members will include representatives from CDFW, USFWS, BLM, CEC, CSLC, USGS, the National Park Service and California Department of Parks and Recreation. When it would supplement the expertise or experience of the Adaptive Management Team, the Coordination Group may also invite qualified representatives of other public agencies and private organizations as members. All members of the Adaptive Management Team will have expertise in biology or other relevant field of science.

Adaptive Management Team Operation

The Adaptive Management Team may invite individuals, or convene subteams consisting of individuals who are not members of the Team, to provide input into specific technical or scientific MAMP implementation issues. These individuals or subteams may be from the technical staffs of Adaptive Management Team members or other entities or institutions, as deemed appropriate by the Team. The Adaptive Management Team will also ensure that the Science Subgroup of the Stakeholder Working Group is afforded an opportunity to provide input into MAMP implementation.

The Program Manager may ask the Adaptive Management Team to provide scientific review of specific technical issues related to implementation of the MAMP or implementation of the DRECP conservation strategy, regardless of whether such review is specifically required by the MAMP. At least once every three years, the Adaptive Management Team will also assess the overall efficacy of the MAMP and provide recommendations to the Coordination Group regarding whether revisions to the MAMP would improve its effectiveness.

Public Agency Working Group

The Program Manager will form a Public Agency Working Group to coordinate implementation of DRECP planning components and Plan-wide program elements with public agencies with lands, programs, facilities or regulatory jurisdiction in the desert and will seek input regarding DRECP implementation. DRECP implementation will complement, overlap with, or affect activities implemented by several public agencies. The Public Agency Working Group is intended to provide a partnership structure in which public agencies and the Coordination Group can coordinate such activities.

The Public Agency Working Group will select two chairs. The Program Manager, working with the chairs, will establish the frequency, location and agendas for Public Agency Working Group meetings.

Governments and government agencies that will be invited to participate in the Public Agency Working Group will include:

- Local governments
- Military Bases
- California Public Utilities Commission
- National Park Service
- Tribal Governments[4]
- California Department of Parks and Recreation
- United States Geological Survey
- California Department of Conservation
- United States Army Corps of Engineers
- California Independent System Operator
- Lahontan Regional Water Quality Control Board
- U.S. Environmental Protection Agency

The Public Agency Working Group may address a range of land and resource management and other issues, including but not limited to DRECP implementation issues. In addition to making recommendations regarding DRECP implementation actions, the Public Agency

[4] Tribal governments will be invited to participate for purposes of informal coordination and consultation regarding DRECP implementation. Participation in the Public Agency Working Group would be in addition to, and not in place of, formal tribal consultations required under State or federal law.

Working Group may elect to develop proposals or recommendations regarding other related land and resource management activities of any of its member agencies and provide the proposals or recommendations to the appropriate member agency(ies). The Public Agency Working Group may be used to address any land management issues in or adjacent to the Plan Area that are related to DRECP.

The Partners Working Group may provide input regarding DRECP implementation that reflects differing views within the Working Group.

Stakeholder Working Group

The Program Manager will form a Stakeholder Working Group to provide input regarding DRECP implementation. The Stakeholder Working Group will select two chairs. The Program Manager, working with the chairs of the Stakeholder Working Group, will establish the frequency, location, and agendas for Stakeholder Working Group meetings. The Stakeholder Working Group will include of representatives of:

- The general public within desert communities
- Solar energy industry
- Wind energy industry
- Geothermal energy industry
- Environmental organizations
- Motorized recreation
- Non-motorized recreation
- Utilities
- Non-profit conservation organizations, including land trusts, that own land in the desert

The Stakeholder Working Group may provide input regarding DRECP implementation that reflects differing views within the Working Group.

Stakeholder Science Subgroup

The Stakeholder Working Group will include a Stakeholder Science Subgroup to provide an opportunity for stakeholder scientists and technical experts to provide scientific input to the Coordination Group regarding DRECP implementation. Membership in the Science Subgroup will be determined by the Stakeholder Working Group. All Science Subgroup members must have expertise in biology or other relevant field of science, or appropriate technical expertise.

Other Working Groups

The Coordination Group will form other working groups as needed to inform DRECP implementation.

Community Outreach and Public Information

The Coordination Group will conduct community outreach to inform and engage local communities in the desert regarding implementation of Plan-wide programs and will make information available to the public at large, through a DRECP website and other appropriate means, regarding the DRECP. The DRECP website will include a data portal that will provide various datasets, including static maps and dynamic, and interactive mapping tools that support the adaptive management component of the MAMP (see Section II.3.1.3.5.2).

Supporting Entities

The Coordination Group may request other entities, "Supporting Entities," to perform certain implementation tasks, where such entities have the authority, resources, expertise, and willingness to successfully undertake and complete the task. Tasks that could be implemented at least in part by Supporting Entities include reserve management, land acquisition, habitat restoration, monitoring, and data management. Supporting Entities may include, among others:

- The National Fish and Wildlife Foundation
- Non-profit conservation organizations, including land trusts, that own property in the desert
- Desert tortoise recovery implementation teams
- Flat-tailed horned lizard management team

Independent Science Input

The Coordination Group will arrange for independent science input to address scientific uncertainties regarding the implementation of Plan-wide programs. The Coordination Group will seek input from the Adaptive Management Team, Public Agency Working Group and Stakeholder Working Group regarding the scope and use of independent science input.

DRECP Modifications and Amendments

The Coordination Group will review, and in some cases may propose, modifications or amendments to the DRECP. An amendment is a change to the DRECP that requires a formal amendment to the NCCP or the GCP, or permits issued under the NCCP or GCP, or a formal

LUPA amendment. A modification is a change to the DRECP that does not require a formal amendment. The Public Agency Working Group and the Stakeholder Working Group may also propose DRECP modifications and amendments. Modifications and amendments are briefly described here and discussed in greater detail in Section II.3.1.5.8.

Modifications and amendments to the DRECP are expected to occur over the course of the plan term. Participation by counties or other local or state agencies will be encouraged and could lead to the development of tiered HCPs and NCCPs that would implement the DRECP, which would in some cases require amendments to the GCP and the NCCP. Changes in renewable energy development technology could also lead to DRECP modifications or amendments. For example, based on new designs for wind turbines or solar facilities that reduce impacts to Covered Species, avoidance and minimization measures may need to be revised. Any such modifications and amendments would be consistent with the DRECP BGOs.

Proposed Modifications

The Coordination Group may make minor modifications to the DRECP. Where the Adaptive Management Team, Partners Working Group, or Stakeholder Working Group proposes a modification to the DRECP, the Coordination Group will review the proposal and decide what action, if any, should be taken based on the proposal.

Proposed Amendments

The Coordination Group may propose DRECP amendments to the DRECP Executive Policy Group for consideration. Before it submits a proposed amendment to the Executive Policy Group, it will seek input regarding the amendment from the Public Agency Working Group and the Stakeholder Working Group and will include a summary of the input received with its proposal. If the Coordination Group determines that the proposed amendment raises a scientific issue, it will also seek input from the Adaptive Management Team and will include a summary of its input with the proposal.

If the Public Agency Working Group proposes a DRECP amendment, the Coordinating Group will seek input from the Stakeholder Working Group. Likewise, if the Stakeholder Working Group proposes a DRECP amendment, the Coordinating Group will seek input from the Public Agency Working Group. If the Coordination Group determines that a proposed amendment raises a scientific issue, it will also seek input from the Adaptive Management Team. Based on the input it receives, and on its independent evaluation of the proposed amendment, the Coordination Group will provide a recommendation to the Executive Policy Group regarding what action to take with regard to the proposed amendment. The Coordination Group will include a summary of the input received with its recommendation. The Executive Policy Group will decide whether to initiate a formal

amendment process under the Federal Land Management and Policy Act, the ESA, or the NCCPA based on the proposal after reviewing and considering the Coordination Group's recommendation. While the Coordination Group and the Executive Policy Group will make recommendations regarding proposed amendments, the final decision on any proposed amendment, as well as the final decision about whether a proposed change is an amendment or a modification, will be made by the agency or agencies with authority to make that decision under applicable laws and regulations (e.g., NCCP, GCP, or LUPA).

Take Authorizations

This section applies only to modifications and amendments of the DRECP itself (i.e., the NCCP, the GCP, or the LUPA). It does not apply to modifications or amendments of take authorizations issued under Section 10 of the ESA or under the NCCPA. Modifications and amendments of such take authorizations may only be proposed by, and must be approved by, the applicable permittee, the USFWS, and CDFW.

II.3.1.5.2.5 Tribal Consultation

Tribal governments have a special status under both state and federal law. Because the Coordination Group will not be a new or separate legal entity, members of the Coordination Group will retain their current authorities and responsibilities for tribal consultations. However, the Coordination Group will coordinate timely state and federal consultations on DRECP implementation issues with tribal governments in accordance with state and federal law and policy.

II.3.1.5.2.6 Partnership with Local Governments

The Executive Policy Group and the Coordination Group will encourage counties and other local governments to refer to the DRECP to inform local land use planning and to rely on the NCCP and GCP for state and federal take authorizations. The Executive Policy Group and Coordination group will also welcome coordination among local, state and federal permitting agencies regarding renewable energy and transmission projects covered by the DRECP and actions to conserve DRECP Covered Species. The DRECP will not affect local governments' land use authority; local governments will continue to have land use authority over most renewable energy projects on private land. Consequently, local governments will usually be the CEQA lead agencies for such projects and will usually have the ultimate authority to approve or disapprove them. Coordination with local governments will therefore be important to the success of the DRECP.

There are four general ways that local governments can participate in the implementation of the DRECP. Local governments could participate in more than one of these ways.

Informal Participation

The Executive Policy Group and the Coordination Group will welcome informal collaboration with local governments regarding DRECP implementation, local land use planning, and permitting for renewable energy projects. Regardless of whether a local government participates in one of the DRECP advisory committees, it could provide input to the Executive Policy Group and Coordination Group about specific implementation issues relevant to the local government.

Formal Coordination Role

As described above, the DRECP will establish the Public Agency Working Group to create established roles for government agencies to provide input into, and to coordinate their efforts with, DRECP implementation. Local governments can become a member of the Public Agency Working Group.

Permittee/Plan Participant

Local governments can apply for take authorizations under the GCP and NCCP for DRECP Covered Activities (renewable energy development and transmission projects covered by the DRECP) within the local government's jurisdiction. Local government(s) would apply to the CDFW for a take authorization under the NCCP and to USFWS for a take authorization under the GCP. Applications that are consistent with the NCCP's and GCP's terms and conditions would require little additional analysis and planning compared to what is ordinarily required to develop a regional NCCP or HCP. By adopting the NCCP's and GCP's terms and conditions, local governments would benefit from a significantly streamlined permitting process for obtaining take authorizations.

The NCCP and GCP take authorizations would allow the local government itself to extend take authorization to Covered Activities under the terms of the NCCP and GCP when the local government approves such activities. To obtain the permits, the local government would have to agree to require covered renewable energy projects to incorporate the avoidance, minimization and mitigation measures laid out in the DRECP. However, the local government would not have to prepare a separate habitat conservation plan or natural community conservation plan. The local government would be invited to join the Executive Policy Group and the DRECP Coordination Group.

Permittee/Lead Implementing Entity

After the DRECP is finalized, a local government could elect to prepare its own NCCP and HCP that tiers from the DRECP. Under this alternative, the local government would have flexibility to prepare a plan that covers not just renewable energy projects, but also other

private development and public infrastructure projects. The local government would also have flexibility to define appropriate development areas for renewable energy projects and appropriate conservation areas for species covered by the DRECP, provided the local government's plan is consistent with the DRECP's biological goals and objectives and mitigation requirements (i.e., that it tiers from the DRECP.)

If any local government enters into a joint planning agreement with CDFW and the USFWS to prepare such a regional NCCP and apply for incidental take permits directly under the GCP that tier from and will implement the DRECP, HCP, it will be invited to be a member of the DRECP Executive Policy Group upon the date the planning agreement takes effect. If any local government completes a regional NCCP and application for incidental take permits directly under the GCP,, it will be invited to be a member of the DRECP Coordination Group upon approval of the regional NCCP and incidental take permits. In addition, where a regional NCCP and incidental take permits are approved, it would likely become the primary vehicle for DRECP implementation within that NCCP and incidental take permits plan/permit area. NCCPs and incidental take permits that tier from the DRECP would contribute to implementing applicable DRECP BGOs within each NCCP and incidental take permits plan/permit area using local implementation structures and programs. These local implementation structures and programs would reduce the Executive Policy Group's and Coordination Group's role within the NCCP and incidental take permits plan/permit area accordingly.

A comprehensive regional NCCP and incidental take permits directly under the GCP tiered from and implementing the DRECP could cover a range of activities within the local government's jurisdiction, including but not limited to renewable energy projects. The tiered plan could be based on the GCP and NCCP, but it would have to include additional analysis, and additional minimization and mitigation measures, to address the impacts of new covered activities that are not included within DRECP Covered Activities. The local government(s) could propose modifications to the boundaries of DFAs or the reserve design within the tiered NCCP and incidental take permits planning boundary, but any such modifications would have to be consistent with the DRECP's Plan-wide BGOs and other applicable ESA and NCCPA requirements. This form of regional NCCP and incidental take permits would likely require an amendment to the DRECP GCP and NCCP.

Use of the DRECP for Local Land Use Planning

Instead of or in addition to participating directly in the implementation of the DRECP, local governments could choose to use the DRECP for other purposes, such as developing land use plans or policies, developing local requirements for renewable energy projects, identifying conservation priorities, identifying sensitive habitat areas, or identifying

appropriate mitigation areas for the impacts of locally approved projects. The Coordination Group will advise and assist local governments that seek to use the DRECP in these ways.

Coordination Between BLM and Local Governments

The BLM is committed to coordinating with local governments throughout its land use plan amendment process. Once the ROD for the LUPA has been signed, the BLM will continue to partner with interested local governments in the implementation of the LUPA. For those local governments that sign a planning agreement to develop a tiered regional NCCP and HCP, the BLM may participate in the NCCP/HCP process. As part of its ongoing evaluation of its plans under Section V of the BLM Land Use Planning Handbook, the BLM will consider whether adjustments to the LUPA are necessary based on tiered NCCP/HCP processes while ensuring consistency with the BGOs of the DRECP.

II.3.1.5.3 Integrated Project Proposal Review Process

The DRECP is designed to provide a comprehensive conservation and mitigation program for Covered Species and a permitting program for state and federal take authorizations for Covered Activities that integrates the requirements of the LUPA, the GCP and the NCCP. The DRECP does not supplant existing statutory requirements or regulatory permitting process. For activities proposed on BLM lands, regulatory ROW grant process will continue to apply; for activities under the CEC's licensing authority, the CEC's licensing process will continue to apply; and for activities proposed on CSLC lands, the CSLC's leasing process will continue to apply. Likewise, for Covered Activities that are within the land use authority or other discretionary authority of local governments or state or federal agencies, existing review and approval process and requirements will remain in effect. The DRECP is designed to provide an integrated federal and state permitting process for take authorizations for Covered Species from Covered Activities that can be integrated with existing federal, state, and local project review and approval and permitting process. By providing an integrated permitting process, the DRECP is intended to make the substantive requirements for federal and state take authorizations for Covered Activities consistent and predictable and to make the process for obtaining them more efficient.

This section explains how federal and state agencies will coordinate their review of Covered Activities, how the integrated project proposal review process will work, and what information the integrated project proposal requires. This section will also explain the requirement to consult with appropriate military representatives regarding potential conflicts with military operations, training and testing.

II.3.1.5.3.1 Agency Coordination

The USFWS, BLM, CDFW, CEC, and CSLC will coordinate their environmental review of individual Covered Activities to make the process of obtaining federal and state take authorizations for individual Covered Activities more efficient and to ensure that the requirements for such take authorizations are consistent and predictable. If other federal, state, or local agencies obtain federal and state take authorizations under the DRECP, or develop NCCPs or HCPs that tier from the DRECP, those agencies will also be expected to coordinate their environmental review of Covered Activities under the DRECP. Participating in the DRECP integrated project proposal review process will not diminish the discretionary authority of any participating agency; each agency will retain its statutory responsibilities and authorities. However, to provide an integrated process for federal and state take authorizations for individual Covered Activities, participating agencies must coordinate their environmental review and regulatory actions (i.e., BLM ROW approval, CEC licensing, CSLC leasing, etc.).

The USFWS, BLM, CDFW, CEC, and CSLC, and any other federal, state, or local agencies that become DRECP participating agencies, will coordinate the environmental review and regulatory actions for Covered Activities by engaging the Coordination Group. Participating agencies will require proponents of Covered Activities under the agencies' authority to complete a DRECP integrated project proposal (see below). Only one integrated project proposal will be required for each proposed Covered Activity. For example, if a Covered Activity that does not fall under CEC or CSLC authority is proposed on nonfederal public land or private land, one integrated project proposal could be submitted to the USFWS and CDFW to obtain a federal incidental take permit for Covered Species under the GCP and a state take authorization for Covered Species under the NCCP.

The participating agencies with authority over a proposed Covered Activity will seek input from the Coordination Group about whether the project proposal submitted for the proposed Covered Activity fulfills DRECP requirements and whether the Covered Activity, as proposed, accurately and adequately incorporates applicable DRECP CMA's for Covered Species.

Each participating agency will determine independently, and in accordance with the agency's statutory authorities and responsibilities, what regulatory action to take with regard to a proposed Covered Activities under its authority. However, each participating agency will consider the Coordination Group's input during the agency's environmental review of the proposed Covered Activity and will coordinate directly with any other participating agency with authority over the Activity to ensure that the requirements for federal and state take authorizations are consistent and are not duplicative. For example, BLM and CDFW will coordinate directly regarding Covered Activities that are proposed on

BLM lands and do not fall within CEC jurisdiction, and will provide joint guidance to the proponent of the Activity about DRECP project proposal requirements and the requirements of DRECP CMAs for Covered Species.

II.3.1.5.3.2 Role of Integrated Project Proposal for Federal Take Authorization for Covered Activities on BLM Lands

Covered Activities on BLM lands would receive take authorizations for federally listed species under a biological opinion and incidental take statement issued to BLM by the USFWS in accordance with Section 7(a)(2) of ESA. The USFWS would issue the biological opinion and incidental take statement pursuant to Section 7 of ESA, and take coverage would be provided to Covered Activities under the exemption from ESA's take prohibition provided by the incidental take statement. For Covered Activities proposed on BLM lands, the DRECP integrated project proposal will be used by BLM to determine whether a proposed Covered Activity meets applicable land use plan requirements for Covered Species and is consistent with the biological opinion and incidental take statement for the LUPA.

II.3.1.5.3.3 Avoiding Conflicts with Military Operations, Training, and Testing

The Department of Defense has provided a matrix identifying potential military operational constraints that could result from the construction and operation of Covered Activities within DFAs. The matrix identifies potential constraints by renewable energy technology and is accompanied by several maps with color codes that depict the extent of the potential constraint on military operations (see Appendix J).

Red areas on the maps represent locations where there is a significant likelihood of an unacceptable risk to national security, and the technology identified might impact military operations, testing, and training.

Orange areas represent locations where there is a likelihood of an unacceptable risk to national security, and the technology identified might impact military operations, testing, and training.

Yellow areas represent locations where there is some likelihood of an unacceptable risk to national security, but the technology identified probably will not impact military operations, testing, and training.

In order to use the DRECP's integrated process and to obtain federal or state take authorizations under the DRECP, proponents of Covered Activities must first consult with appropriate representatives of the Department of Defense to ensure the proposed Covered

Activity will not cause an unacceptable risk to national security. Specifically, the following process will be implemented:

- For Covered Activities proposed in red areas, the DRECP integrated project proposal review process and federal and state take authorizations under the DRECP will not be available unless a letter is obtained from the Department of Defense Siting Clearinghouse stating that military impacts have been mitigated.
- For Covered Activities proposed in orange or yellow areas, the DRECP integrated project proposal review process and federal and state take authorizations under the DRECP will be not be available until Department of Defense representatives at the regional level have been consulted and have been provided a minimum of 30 days to assess potential mission impacts. If the regional representatives conclude within the 30 day period that there is a significant possibility that a proposed Covered Activity presents an unacceptable risk to national security, the proposed Covered Activity cannot use the DRECP integrated project proposal review process or obtain federal and state take authorizations under the DRECP unless a letter is obtained from the Department of Defense Siting Clearinghouse stating that military impacts have been mitigated.

II.3.1.5.3.4 DRECP Integrated Project Proposal Submittal and Review Process

To facilitate streamlining under the DRECP, applicants may submit a Project Proposal to the DRECP Coordination Group for an early, informal review for consistency with DRECP requirements. The Project Proposal will identify all relevant project information and review requirements recognizing that not all project information can be assembled and not all review requirements can be met at the Project Proposal stage. Identification of such information and requirements at the Project Proposal stage will ensure that both applicants and reviewing agencies fully understand the project and relevant DRECP requirements at an early stage in the process.

The DRECP Coordination Group will provide an initial assessment regarding the Project Proposal's consistency and, if necessary, identify any revisions or additions needed for consistency with DRECP requirements. The Coordination Group will also work with applicants to ensure they have access to the most current, available DRECP data resources. Where the Coordination Group has initially assessed a Project Proposal and concluded that it is consistent with DRECP requirements, an Application submitted to the appropriate permitting/approval agencies that is consistent with the Project Proposal will benefit from the specific DRECP streamlining timeframes described below.

Project Proposal Information

General Project Information

The Project Proposal must include at least the following components:

- Project applicant information
- Project type and brief project description
- Project location, including county, ecoregion subarea, APNs, and/or legal description
- Map of the project location
- Map of the project site
- Site ownership (e.g., private, BLM, etc.)
- Project size, including proposed development footprint acreage
- Project schedule

For projects within DOD pre-review areas, as identified in the DRECP, Project Proposals must include evidence of the completed pre-review by DOD (see Section II.3.1.5.3.3 and Appendix J).

General Setting and Existing Conditions

The Project Proposal must include a general description of the existing project setting and physical conditions, including at least the following:

- Physical setting (e.g., topography, major rivers or drainages, etc.)
- Existing or authorized land uses
- Known or potential biological resources in the project vicinity
- Identification of DRECP-specific requirements and status, as shown in Exhibit II.3-9, Tables 1–8)
- Identification of Agency-specific application requirements and status (e.g., BLM [Plan of Development], CEC specific requirements, CSLC, CDFW)

This general information will be available on the DRECP data portal. The data portal will house and manage all pertinent spatial data sets and will be regularly updated to provide current content. The portal will be easily accessible to users and will provide users with the ability to create customized maps.

Review of DRECP Project Planning Guidelines

The DRECP data portal will include information regarding applicable DRECP-specific requirements such as BGOs, CMAs and compensatory measures. The available information will also include the environmental studies requirements. This information will be included in the Project Proposal.

Project-Level Studies

Based on the DRECP project planning guidelines and requirements for the project site, the Project Proposal must report the status and/or results of all project-level studies required for the site, including biological studies (e.g., habitat assessment, vegetation mapping, focused species surveys, etc.). The Project Proposal must describe how the studies do or will meet the requirements of the DRECP CMAs (e.g., wetland delineations to support avoidance and minimization of wetland and riparian resources). (See Appendix C for the BGOs, Section II.3.1.2.5 for the biological CMAs, and Appendix H for additional information related to the biological CMAs.)

It is understood that not all project-level studies will be complete at the Project Proposal stage. For example, for projects on BLM lands, applicants may not be provided with access to lands for project-level studies until a formal application process with BLM is underway. The purpose of including information on project level studies in the Project Proposal is to provide opportunity for review of studies that may have been completed and to ensure a common understanding of project-level study requirements and details.

Project Proposal Review Process

The Coordination Group will be available to work with applicants before the Project Proposal is submitted to provide guidance regarding available DRECP data resources, required information for the Project Proposal, required technical studies, and other information. The DRECP Program Manager will be available to applicants during this time period and may assist project applicants in navigating the DRECP Project Proposal and review process. Interaction before the Project Proposal is submitted is intended to assist both the applicant and the Coordination Group in assembling complete and comprehensive submittals that will facilitate review of Project Proposals.

Within 30 days of submittal of a Project Proposal, the Coordination Group will provide feedback to the project applicant regarding the completeness of the submittal, including the impact analysis and consistency analysis. If additional information is required for review of the Project Proposal, the Coordination Group will provide a description of the required materials and will work with applicants to modify the Project Proposal as needed.

Within 30 days of receipt of any needed additional information described by the Coordination Group, the Coordination Group will complete review of the Project Proposal with respect to:

- Adequacy and completeness of the information included in the Project Proposal.
- Initial feedback on consistency of the proposed Covered Activities with the DRECP based on information included in the Project Proposal.
- Recommendations, if appropriate, for project revisions that would result in greater consistency with the DRECP.

The Coordination Group will provide the results of its evaluation in writing to the project applicant.

Upon completion of review by the Coordination Group, the project applicant may use the Project Proposal and results of the Coordination Group evaluation to prepare and submit an application to the agency responsible for issuing the permit or authorization for the proposed Covered Activity. The agency/entity responsible for issuing permits or authorizations for the Covered Activity will have final responsibility for determining whether the Covered Activity meets the requirements for the permit or authorization based on applicable laws and regulations.

A Project Proposal that has completed the Coordination Group review process, and received initial positive assessment regarding consistency with the DRECP, will be eligible for expedited review from DRECP participating agencies, BLM, USFWS, CDFW, CEC and/or CSLC, as applicable.

Such agencies will review and take action with regard to submitted applications that are consistent with such Project Proposals within one year following the determination by the approval agency that the application is complete. Any additional project-level studies or CEQA/NEPA environmental review would have to be completed within this one year period. Projects initially found to be consistent with the DRECP but requiring technical studies extending for more than one year (e.g., 2-year eagle studies) would have an extended review period as needed to complete the study(ies).

II.3.1.5.4 Summary Submittal and Review Process for Projects Seeking Streamlining Under DRECP Including Required Avoidance, Minimization, and Mitigation Requirements

Section II.3.1.5.3 describes the integrated Project Proposal submittal and review process including the role of the DRECP Coordination Group during initial assessment of Project Proposals for consistency with the DRECP. The integrated Project Proposal process concludes with completion of initial assessment by the DRECP Coordination Group after

which the applicant has the option of submitting a project application to the agency/entity with permit authority over the project and processing the application in accordance with agency-specific requirements.

Projects initially assessed as consistent with the DRECP during the integrated Project Proposal process and seeking streamlining under the DRECP would be required to comply with DRECP avoidance, minimization and mitigation requirements as expressed in the DRECP CMAs. DRECP biological and nonbiological CMAs apply during all stages of a project including:

- Pre-siting and design (due diligence)
- Siting and design
- Construction and post-construction.

Biological CMAs are presented in their entirety in Section II.3.1.2.5, and nonbiological CMAs are presented in Section II.3.2.3 and Appendix L.

Exhibit II.3-9 provides a road map summarizing the submittal and review process for projects seeking streamlining under DRECP. The road map is keyed to the project stages noted above and identifies the applicable CMAs during each project stage. Each CMA is given an index number and short name in the exhibit to highlight the particular resource or requirement addressed in the CMA.

The road map references biological CMAs that apply to all projects and nonbiological CMAs applicable to projects on BLM-administered lands. Certain CMAs are standard practices that would apply to all projects while others are resource-specific, linked directly to the presence and distribution of resources on a particular project site.

As previously described, the project submittal and review process commences with accessing the DRECP data base to assess the presence and distribution of resources present on the project site. Available DRECP data will mostly likely be augmented by site-specific data assembled by individual project applicants. The DRECP data portal is a valuable tool that will enable applicants to assess project constraints and opportunities at a very early stage in the due diligence process and understand at the outset the full range of project requirements as well as potential benefits afforded by streamlining under the DRECP.

Exhibit II.3-9 **Summary Submittal and Review Process for Projects Seeking Streamlining Under DRECP Including Required Avoidance, Minimization, and Mitigation Requirements**

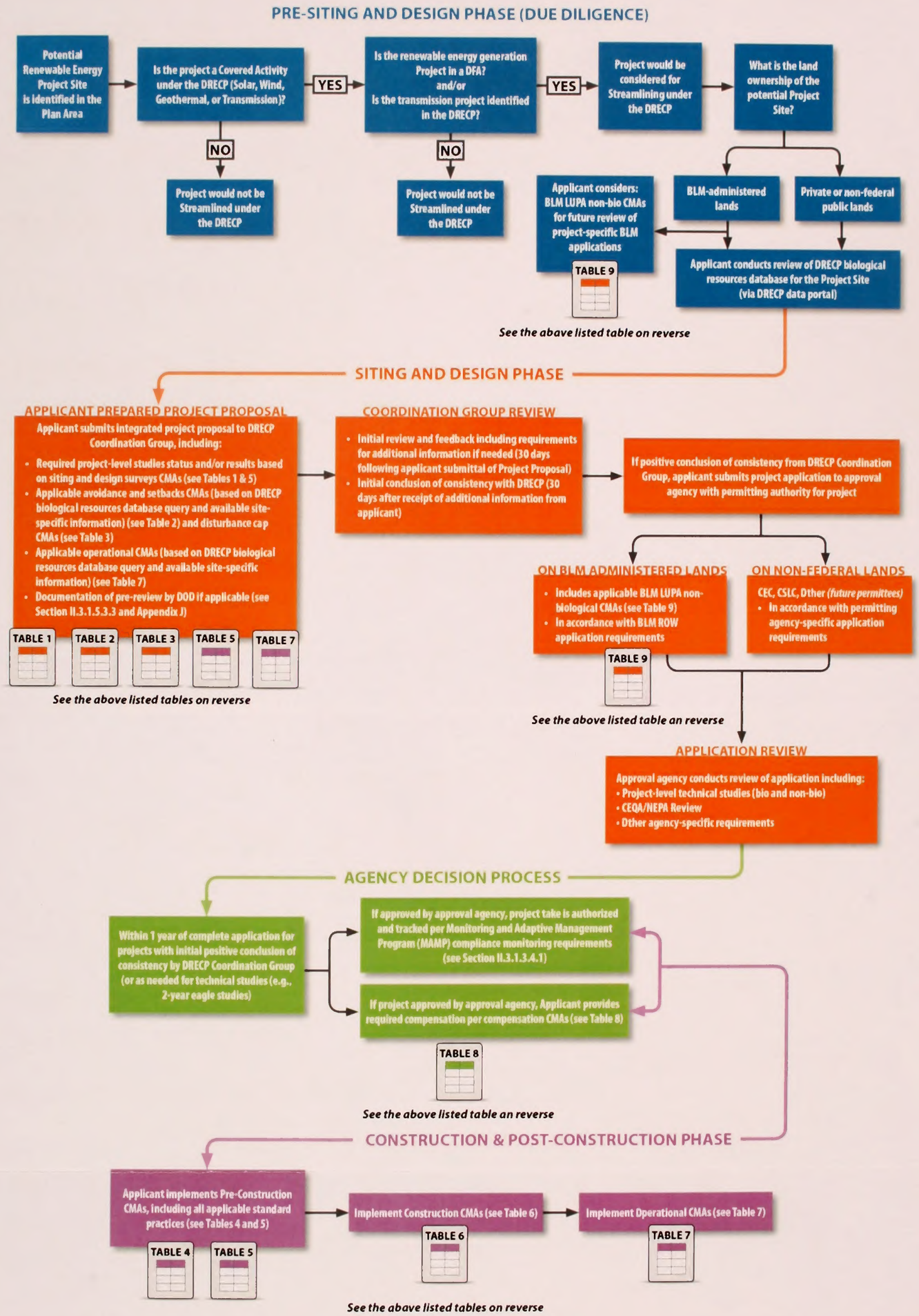


TABLE 1: Siting and Design Surveys

CMA NUMBER	CMA NAME
AM-PW-1	Survey Requirements and Standards
AM-DFA-DUNE-2	Mojave Fringe-toed Lizard Detailed Sand Mapping
AM-DFA-DNC-1	Dther Natural Communities Species Specific Mapping/ Surveying
AM-DFA-AG-1	Agricultural Lands Species Surveys - Swainson's Hawk Protocol Surveys
AM-DFA-PLANT-1	Plant Protocol Surveys
AM-DFA-ICS-1	Individual Covered Species Surveys - Flat-tailed horned lizard
AM-DFA-ICS-37	Mohave Ground Squirrel Protocol Surveys

TABLE 2: Avoidance and Setbacks CMAs

CMA NUMBER	CMA NAME
AM-DFA-RIPWET-1	Riparian and Wetland Avoidance and Setbacks
AM-DFA-RIPWET-3	Riparian and Wetland Bird Setback or Survey
AM-DFA-RIPWET-S	Tricolored Blackbird Seasonal Setback
AM-DFA-RIPWET-6	Fish Setback
AM-DFA-RIPWET-8	Tehachapi Slender Salamander Surveys and Avoidance
AM-DFA-DUNE-1	Dune Avoidance
AM-DFA-AG-2	Agricultural Lands Species Setbacks - Burrowing Dwl and Swainson's Hawk
AM-DFA-AG-3	Burrowing Dwl Biological Monitoring
AM-DFA-AG-6	Greater Sandhill Crane Avoidance
AM-DFA-BAT-1	Bat Avoidance and Setbacks
AM-DFA-PLANT-2	Plant Avoidance and Setback
AM-DFA-ICS-2	Individual Covered Species Setbacks - Bendire's Thrasher, California Condor, Gila Woodpecker, Golden Eagle
AM-DFA-ICS-5	Desert Tortoise Conservation Areas and Linkages Avoidance
AM-DFA-ICS-26	Golden Eagle Recreational Setback and Closures
AM-DFA-ICS-39	Mohave Ground Squirrel Suitable Habitat Disturbance
AM-DFA-ICS-43	Implementing Entity Requirements - Mohave Ground Squirrel Data Gap Baseline Studies

TABLE 3: Disturbance Cap CMAs

CMA NUMBER	CMA NAME
AM-DFA-PLANT-3	Plant Suitable Habitat Impact Caps - Bakersfield cactus, triple-ribbed milk-vetch, and Alkali Mariposa Lily
AM-DFA-ICS-27	Golden Eagle Habitat Disturbance Cap

TABLE 4: Pre-Construction CMAs

CMA NUMBER	CMA NAME
AM-DFA-DUNE-3	Mojave Fringe-toed Lizard Clearance Surveys
AM-DFA-AG-1	Agricultural Lands Species Surveys - Burrowing Dwl Clearance Surveys and Breeding Season Surveys
AM-DFA-AG-4	Burrowing Owl Burrow Exclusion
AM-DFA-AG-5	Burrowing Dwl Translocation
AM-DFA-ICS-1	Individual Covered Species Surveys - Desert Tortoise Moderate Requirement Areas, Bendire's Thrasher, Golden Eagle, Mohave Ground Squirrel
AM-DFA-ICS-3	Desert Tortoise Clearance Survey and Translocation
AM-DFA-ICS-11	Desert Tortoise Clearance Survey and Translocation
AM-DFA-ICS-28	Golden Eagle Pre-Project Surveys
AM-DFA-ICS-29	Golden Eagle Pre-Construction Risk Assessment Surveys
AM-DFA-ICS-36	Mohave Ground Squirrel Clearance Surveys
AM-DFA-ICS-28	Golden Eagle Pre-Project Surveys
AM-DFA-ICS-29	Golden Eagle Pre-Construction Risk Assessment Surveys
AM-DFA-ICS-3	Desert Tortoise Clearance Survey and Translocation
AM-DFA-ICS-36	Mohave Ground Squirrel Clearance Surveys

TABLE 5: Siting and Design/Pre-Construction Standard Practices CMAs

CMA NUMBER	CMA NAME
AM-PW-3	Resource Setback Standards
AM-PW-4	Seasonal Restrictions
AM-PW-6	Subsidized Predators Standards
AM-PW-7	Restoration of Areas Disturbed by Construction Activities But Not Converted by Long-Term Covered Activities
AM-PW-8	Closure and Decommissioning Standards
AM-PW-9	Standard Practices for Hydrology and Water Resources
AM-PW-10	Standard Practices for Soil Resources
AM-PW-11	Standard Practices for Weed Management
AM-PW-12	Standard Practices for Fire Prevention/Protection
AM-PW-13	Standard Practices for Noise
AM-PW-14	Standard Practices for Siting and Design
AM-PW-15	Standard Practices for Controlling Nuisance Animals and Invasive Species
AM-PW-16	Standard Practices for Caring of Injured Wildlife
AM-PW-17	Dther General Standard Practices
AM-LL-1	Linkages and Connectivity
AM-LL-2	Hydrology
AM-LL-3	Aeolian Processes

TABLE 5: Continued

AM-DFA-RIPWET-2	Maintaining Wetland Hydrological Function
AM-DFA-RIPWET-9	Tehachapi Slender Salamander Barriers
AM-DFA-DNC-2	Dther Natural Communities Species Preservation or Salvage Actions
AM-DFA-ICS-4	Desert Tortoise Translocation Site Avoidance
AM-DFA-ICS-6	Desert Tortoise Linkage Effects Evaluation
AM-DFA-ICS-7	Desert Tortoise Drd-Rodman TCA
AM-DFA-ICS-8	Desert Tortoise Road Restrictions in Tortoise Conservation Areas and Linkages
AM-DFA-ICS-16	Flat-tailed horned lizard RMS Minimization Measures
AM-DFA-ICS-20	California Condor Guy Wire Bird Deterrents
AM-DFA-ICS-22	California Condor Nest Territory Management Plans
AM-DFA-ICS-30	Golden Eagle Risk Assessment
AM-DFA-ICS-32	Golden Eagle Take Permit Information Submittal
AM-DFA-ICS-34	Desert Bighorn Sheep Water Access – Covered Activities
AM-DFA-ICS-35	Desert Bighorn Sheep Water Access - Transmission
AM-DFA-ICS-38	Mohave Ground Squirrel Impact Minimization in Linkages
AM-DFA-ICS-40	Mohave Ground Squirrel Habitat Growth Configuration
AM-TRANS-1	Undergrounding Electrical Lines
AM-TRANS-2	Flight Diverters
AM-TRANS-3	Avoid Transmission Across Canyons
AM-TRANS-4	Transmission Projects Siting

TABLE 6: Construction CMAs

CMA NUMBER	CMA NAME
AM-PW-2	Biological Monitoring
AM-PW-5	Worker Education
AM-DFA-ICS-9	Desert Tortoise Road Crossings
AM-DFA-ICS-10	Desert Tortoise Exclusion Fencing
AM-DFA-ICS-12	Desert Tortoise Biological Monitoring
AM-DFA-ICS-13	Desert Tortoise Biological Monitoring of Geotechnical Borings
AM-DFA-ICS-14	Desert Tortoise Vehicle Inspection
AM-DFA-ICS-15	Desert Tortoise Speed Limit
AM-DFA-ICS-17	Bendire's Thrasher Biological Monitoring
AM-DFA-ICS-18	California Condor Avoidance and Notification
AM-DFA-ICS-19	California Condor Flight Activity Restriction
AM-DFA-ICS-21	California Condor Materials Storage
AM-DFA-ICS-22	California Condor Ethylene Glycol Restriction
AM-DFA-ICS-31	Golden Eagle Mortality Monitoring

TABLE 7: Operational CMAs

CMA NUMBER	CMA NAME
AM-LL-4	Project-Specific Bird and Bat Operational Actions for Covered Species
AM-DFA-RIPWET-4	Riparian and Wetland Bird Lighting
AM-DFA-RIPWET-7	Fish Operational Recovery Plan Measures
AM-DFA-AG-7	Swainson's Hawk Rodenticides and Insecticides Prohibition
AM-DFA-ICS-14	Desert Tortoise Vehicle Inspection
AM-DFA-ICS-15	Desert Tortoise Speed Limit
AM-DFA-ICS-23	California Condor Detect, Deter, and Curtailment Strategy
AM-DFA-ICS-24	California Condor Operational Prevention
AM-DFA-ICS-25	California Condor Operations Strategy
AM-DFA-ICS-31	Golden Eagle Mortality Monitoring
AM-DFA-ICS-33	Golden Eagle Advanced Conservation Practices
AM-DFA-ICS-41	Mohave Ground Squirrel Avoidance During Operations
AM-DFA-ICS-42	Mohave Ground Squirrel BLM Rodenticides
AM-LL-4	Project-Specific Bird and Bat Covered Species Operational Actions
AM-LL-5	Project-Specific Bird and Bat Non-covered Species Conservation Strategy

TABLE 8: Compensation CMAs

CMA NUMBER	CMA NAME
CDMP-1	Compensation Requirements for Siting, Construction, Terrestrial Operational, and Decommissioning Impacts in DFAs
CDMP-2	Compensation Requirements for Siting, Construction, Terrestrial Operational, and Decommissioning Impacts for Transmission in the Plan-wide Reserve Design Envelope
CDMP-3	Compensation Requirements for Operational Bird and Bat Covered Species Impacts
CDMP-4	Golden Eagle Specific Compensation
CDMP-5	DRECP-wide Golden Eagle Monitoring

TABLE 9: Preferred Alternative CMAs for Resources Areas

Air Resources
CMAs for the Entire Planning Area
Comprehensive Trails and Travel Management
CMAs for the Entire Planning Area
CMAs in Development Focus Areas and DRECP Variance Lands, Future Assessment Areas, and Special Analysis Areas
CMAs National Conservation Lands, Areas of Critical Environmental Concern, and Wildlife Allocations
CMAs for Special Recreation Management Areas
Cultural Resources and Tribal Interests
CMAs for the Entire Planning Area
CMAs in Development Focus Areas and DRECP Study Areas, and Transmission Corridors
CMAs for National Conservation Lands and Areas of Critical Environmental Concern
Lands and Realty
CMAs for the Entire Planning Area
Exchanges with the State of California
CMAs in Development Focus Areas and DRECP Study Areas
CMAs in National Conservation Lands
CMAs in Areas of Critical Environmental Concern
CMAs in Wildlife Allocations
CMAs in Special Recreation Management Areas
Livestock Grazing
Standards of Rangeland Health and Guidelines for Grazing Management
CMAs for the Entire Planning Area
Minerals
CMAs for the Entire Planning Area
High Potential Mineral Areas
Existing Mineral/Energy Operations
Existing High Priority Mineral/Energy Operations Exclusion Areas
Access to Existing Operations
Areas Located Outside Identified Mineral Areas
CMAs in National Conservation Lands and Areas of Critical Environmental Concerns
High Potential Mineral Areas
National Scenic & Historic Trails
Conservation and Management Actions
National Recreational Trails
Conservation and Management Actions
Paleontology
CMAs for the Entire Planning Area
Recreation and Visitor Services
CMAs for the Entire Planning Area
CMAs in Development Focus Areas and DRECP Variance Lands, Future Assessment Areas, and Special Analysis Areas
CMAs in National Conservation Lands, Areas of Critical Environmental Concern, and Wildlife Allocations
CMAs in Special Recreation Management Areas
Soil, Water, and Water-Dependent Resources
CMAs Common to the Entire Planning Area
General
Soil Resources
Surface Water
Groundwater Resources
Soil, Water, and Water-Dependent Resources CMAs Restricted to Specific Areas on BLM lands (Devils Hole, Calvada Springs/South Pahrump Valley DFA; Death Valley National Park, Joshua Tree National Park or Mojave National Preserve)
CMAs for Development Forus Areas and DRECP Study Areas (for Vegetation only)
Special Vegetation Features
CMAs Common to the Entire Planning Area
Vegetation
CMAs Common to the Entire Planning Area
CMAs for Development Focus Areas and DRECP Study Areas
Visual Resources Management
CMAs Common to the Entire Planning Area
CMAs for Development Focus Areas and DRECP Study Areas
CMAs in Areas of Critical Environmental Concern and Special Recreation Management Areas
Wild Horses and Burros
Conservation and Management Areas for Development Focus Areas and DRECP Variance Lands, Future Assessment Areas, and Special Analysis Areas
Wilderness Characteristics
CMAs Common to the Entire Planning Area
CMAs for those Lands Identified for Management to Protect Wilderness Characteristics
CMAs for Development Forus Areas and Approved Transmission Corridors

NOTES:

** CMAs = Conservation and Management Actions*

*** In additionto the biological CMAs that apply to Covered Activities in the DFAs, transmission projects in the reserve would be required to implement the applicable biological CMAs for the reserve shown in Section II.3.1.2.5.5*

II.3.1.5.5 DRECP Conservation Area Assembly

Reserve Assembly

Assembly of the DRECP Conservation Area is one of the key elements of the DRECP conservation strategy and is necessary to achieve the DRECP's Step-Down Biological Objectives. On private lands, the DRECP Conservation Area will be assembled primarily through the purchase of land from willing sellers. Only lands that will significantly contribute to the assembly of the reserve, both with regard to protection of existing important resources and the ability to manage the resources in perpetuity, will be acquired. Lands acquired for the DRECP would be managed and monitored consistent with the DRECP. Appendix H, Section H.4.3, describes the process for identifying conservation priorities including mapped priority areas and criteria to be used by the Coordination Group for land acquisition during plan implementation.

Assembly of the DRECP Conservation Area on BLM-administered lands will be accomplished consistent with the BLM LUPA, DRECP concepts and principles, federal law, MOUs between the BLM and CDFW dated November 27, 2012, and the non-acquisition compensation approach described in Section H.4.3 of Appendix H. The MOUs address cooperation and coordination between BLM and CDFW regarding the management of BLM Conservation Lands and the creation of the NCCP Reserve, a portion of which will occur on BLM Conservation Lands. Assembly of the DRECP Conservation Area on BLM Conservation Lands will be accomplished through assembly of the NCCP Reserve. As explained in the November 27, 2012 MOU, BLM and CDFW will work together to "identify and evaluate tools and actions, consistent with BLM's land use authority...to manage the lands identified by CDFG[5] as part of a habitat reserve to meet the NCCPA requirements." The MOU provides guidelines for compensatory mitigation actions, including the possibility of mitigation on BLM lands for impacts caused by development on privately and state-owned lands. In general, the DRECP Conservation Area on BLM-administered lands will be assembled on the BLM Conservation Lands on which non-acquisition forms of compensatory mitigation and conservation actions are implemented.

Criteria for Land Acquisition

The Coordination Group will be responsible for determining the private lands most suitable for acquisition based on a variety factors, including existing biological value, future value with management (including creation, restoration and enhancement), and practical

[5] Now the California Department of Fish and Wildlife (CDFW).

considerations, such as availability (i.e., willing sellers) and cost. All land acquisitions from private property owners will be from willing sellers.

The factors that will be used to determine the private lands that are most suitable for acquisition include the following.

- Selection of acquisition sites will be based on consideration of ability of the site to contribute to meeting the Step-down Biological Objectives and minimize and mitigate the effects of incidental take of Covered Species, as well as cost and availability (i.e., willing sellers).
- Demonstrated contribution to meeting the Step-down Biological Objectives with regard to landscape feature, ecological processes, natural communities, and/or Covered Species. High priority will be given to lands that:
    - Contain resources impacted by Covered Activities being compensated (i.e., "like-kind")
    - Provide important landscape functions including habitat linkages, wildlife movement, sand transport, and hydrologic integrity
    - Support rare vegetation alliances or local rare vegetation occurrences that may not be adequately conserved in other lands in the reserve
    - Have high Covered Species richness and ecological value
    - Have high landscape intactness
    - Are resistant to climate change and/or offering most climate refugia value (i.e., areas identified as important for accommodating climate change-related shifts such as higher elevation refuges for plant and animal communities)
    - Are identified as compensation priority areas by the Coordination Group during plan implementation (see Appendix H, Section H.4.3)
- Ability to be managed for long-term conservation.
- All lands acquired for the DRECP Conservation Area would be managed for the conservation of DRECP Covered Species, natural communities, and ecological processes and will include:
    - long-term property stewardship (e.g., general site maintenance, fence and sign maintenance)
    - long-term compliance and effectiveness monitoring implemented consistent with and in coordination with the DRECP MAMP

  - long-term management activities (e.g., invasive control actions, site patrolling and enforcement, species-specific management actions) implemented consistent with and in coordination with the DRECP
- Evaluation of a site's ability to be managed for long-term conservation would include a consideration of existing condition and anticipated nearby land uses. For example, inholdings within BLM conservation areas likely are better candidates for management than edge sites next to urban development or heavily used recreation areas. However, some peripheral sites may add significant value to the reserve by providing buffer function for high resource value reserve lands.
- Acquisition will occur on private lands in the DRECP Plan-Wide Reserve Design Envelope, including inholdings within LLPAs and BLM LUPA conservation designations.
- Acquisition should occur in the same ecoregion subarea as where the impact occurs. In cases where the impacts span more than one subarea, acquisition can be wholly or partially in those subareas.

Acquisition Lands Assessment Outline

A general outline for assessing potential acquisition lands is described here. This outline includes basic property information and biological considerations based on the criteria described above.

- Property location: a simple legal description of the property
- Existing setting, including:
- General location in the Plan Area
- Adjacent and nearby land ownership and land uses (both historical and current)
- Existing conditions based on DRECP database information, including land cover(s), hydrology, soils, topography and any other unique landscape features (e.g., rocky outcrops, cervices, mines, etc.)
- Existing ROWs and easements on the land
- Site conditions (likely requiring a site visit) including, but not limited to:
- Existing roads, utility lines, and fencing
- Other man-made features or disturbances (e.g., buildings, mechanical clearing)
- Water sources (wells, springs, waters features)
- Biological conditions (more refined than DRECP land cover data), including:

- On-site vegetation communities (at least to alliance level) and other non-natural land covers
- Evidence of Covered Species or their habitats (the DRECP data may include modeled habitat for a species on the site, but field assessments should be used to confirm whether the site actually supports suitable habitat given the spatial scale of the DRECP data used for the habitat models). For some sites, additional focused surveys for Covered Species may be required for a final determination of acquisition.
- Microhabitat or microenvironment features that may support a particularly high biodiversity or unique or narrow endemic species (e.g., springs, caves, rock outcrops)
- Level of existing disturbance, such as presence of non-native plant and animal species, ground disturbances that may be difficult to remediate (e.g., impacts to desert pavement), grazing, OHVs, trash dumping, illegal shooting, etc.
- Presence of human-subsidized species such as common ravens
- Overall assessment of site for acquisition based on several factors:
- Presence of, or high potential to support, Covered Species (e.g., with habitat creation, restoration, or enhancement)
- Level of existing disturbance
- Contribution to reserve function
- Manageability
- Ability to buffer other high value reserve lands
- Cost and availability

The Coordination Group will develop a formal site assessment method and standard report template prior to initiating land acquisition assessments.

Timing of Land Acquisition

The NCCPA requires that "implementation of mitigation is roughly proportional in time and extent to the impact on habitat or covered species authorized under the plan" (California Fish and Game Code, Section 2820[b][9]). To meet this requirement, the DRECP requires that land acquisition, as well as non-acquisition forms of compensatory mitigation, be initiated and/or completed within 12 months of the time the impact being mitigated occurs (e.g., ground disturbance for construction activities of mortality due to operations), with a 6 month extension permitted subject to approval by the agency issuing the permit/approval for the Covered Activity.

Rough proportionality requirements for various conservation actions may vary. For example:

- For land acquisition forms of compensation, the entity receiving the fee and responsible for acquisition, or the project developer if such developer has elected to complete land acquisition in lieu of paying a fee, must demonstrate completion of land acquisition or conservation easement and conveyance to the appropriate land management entity.
- For habitat restoration/enhancement forms of compensation, the permitting/approving entity must demonstrate completion of installation of plant materials and that initial (3-6 months) success criteria are met, recognizing full satisfaction of success criteria may extend for several years.
- For non-acquisition forms of compensation, time considerations may vary depending on whether the activity is action oriented (e.g., installation of fencing) or non-action oriented (e.g., a durability mechanism).

General Process for Land Acquisition

The Coordination Group will be responsible for implementing all land acquisitions for the DRECP Conservation Area. In addition to meeting the land acquisition criteria stated above, several issues will need to be addressed during the acquisition process:

- Ensuring that the property has no encumbrances (e.g., liens, ROWs, mineral rights, existing easements), as identified in a preliminary title report, that will substantially conflict with protection and management of the site or compromise the conservation values and other DRECP BGOs.
- Ensuring that the property does not have hazardous waste, as identified in a Phase 1 Site Assessment.
- Land may be acquired through fee title or conservation easement, according to the following steps:
    1. Identify sites that meet the biological criteria described above based on general review of available data (i.e., excluding the ground-based site assessment).
    2. Contact property owner and determine their willingness to sell the land of provide and easement. Private property rights will be fully respected and land will only be acquired from willing sellers at fair market value and with terms mutually acceptable to the seller and the Coordination Group.
    3. For willing sellers, identify sites for follow-up on-the-ground site assessment or more detailed assessment using remote sensing information (e.g., air photos).

4. Conduct any additional study(ies) of the site that may be needed to confirm the suitability of the site for acquisition.
5. If the site meets the criteria for acquisition, conduct appraisal for fee title or easement and negotiate conditions for acquisition with the property owner, including, but not limited to, easement vs. fee title, cost, and other pertinent conditions of sale or easement (e.g., removal of existing structures, etc.). The negotiation period will be up to 120 days. If at the end of 120 days an agreement is not achieved, the negotiation period may be extended upon mutual written consent of both parties.
6. The Coordination Group will rank and prioritize suitable acquisitions using a standard and objective evaluation method (e.g., a scoring system).
7. For properties acquired through conservation easement, the Coordination Group will work with the property owner to develop the conservation easement agreement, which will include the general conditions for maintenance of the site and conditions for management and monitoring of DRECP Covered Species, natural communities, and ecological processes on the site consistent with and/or complementary to the DRECP (management details may be refined at a later time).
8. For properties acquired in fee title and added to an existing reserve, the existing reserve management plan will be updated to include the new property, as needed.

Property Owner Initiated Conveyances

Upon approval of the DRECP some property owners may want to initiate the processes of conveying their land to the reserve either through fee title sale or conservation easement. In this case the property owner would submit an application to the Coordination Group for review and determination whether the property would meet the general criteria for acquisition. The Coordination Group will provide the property owner with application instructions that would meet the requirements of a complete application. This application will include a biological evaluation of the property by a qualified biologist, including land cover mapping, assessment of occurrence or potential occurrence of Covered Species or their habitat, and the biological contribution of the property using the criteria listed above under Criteria for Land Acquisition. If necessary, the Coordination Group may request access to the property to verify conditions on site, or may request additional studies. If the site meets the initial screening for acquisition, the process will follow steps 6 through 7 or 8. It will be made clear to the property owner at this time that acceptance of the property for potential inclusion in the reserve is not guaranteed and that the site would be ranked and prioritized for acquisition like any other properties.

Individual project proponents may choose to acquire and convey lands to DRECP. Where an NCCP or GCP permittee proposes to provide lands for addition to the reserve in lieu of paying a portion of the DRECP implementation fee, no ground-disturbing activities conducted in conjunction with the permit would be allowed until the Coordination Group has accepted, and the permittee has conveyed, the proposed property into the reserve, another appropriate mitigation site has been secured, or the applicant has paid the implementation fee.

II.3.1.5.6 Information Management

Data Management

A. A centralized data management system for the DRECP will be established and managed by the Coordination Group. For the MAMP, monitoring and management data and other relevant information (e.g., independent research studies within the reserve, independent scientific literature, etc.) will be compiled by the Coordination Group to ensure that all relevant data and information are integrated, synthesized, and evaluated. The Coordination Group will also be responsible for data storage and management. All data collected for DRECP-related purposes will be appropriately collected, recorded, and reported according to standard quality assurance measures (also called "best practices"). The quality assurance measures will be established as part of MAMP preparation. Generally, any spatial data will be identified using a digital GIS format in a known coordinate system and to a precision appropriate to the spatial resolution of the subject. All field data will be supplied by the collector to the Coordination Group via the Project Manager in a readable digital format compatible with entry into the DRECP data portal (see Section II.3.1.3.5.2)

B. Data storage and management on the DRECP data portal will be standardized to maintain a high level of quality assurance and will include specific protocols for naming directories, subdirectories, and files. For all datasets (raw data or modeled results), standardized metadata will be provided, including full explanations for how various datasets and other products were created.

C. The Coordination Group will make the database information available to the various entities involved in DRECP implementation, including the Adaptive Management Team, the Stakeholder Working Group, Supporting Entities, Partners Working Group, as well as other agencies involved in implementing the DRECP, and other interested parties. While data sharing will be encouraged, some datasets may be kept private and only available to a defined subset of users (permanently or temporarily) include: (1) resource security issues; (2) data sensitivity issues such as specific locations of rare or highly sensitive species (e.g., bat roosts); (3) sharing limitations due to existing data sharing agreements; and (4) state of data

completeness (working drafts of some datasets are often best kept private or have limited distribution until they are fully vetted and finalized). In most cases, a balance can be struck that allows for some aspects of datasets to be made public without compromising the reasons for which the content was made private. For example, if the specific spatial location of certain features is the concern, the original data can be generalized to be less explicit as to its specific location. In other cases, sensitive attributes can be removed (e.g., land owner name) from features that can otherwise be shared.

II.3.1.5.7 Annual Reporting

The Coordination Group will issue an annual report that describes for the reporting period the status of Covered Activities for that year and to-date from the Effective Date of the permit, the results of the required monitoring and management, any instances of non-compliance with the provisions of the DRECP and actions taken to rectify the non-compliance, and any other problems encountered in implementing the DRECP in the reporting period.

The annual reports will provide the results of DRECP compliance and effectiveness monitoring.

The annual reports will include the following compliance monitoring information:

- Summary of all Covered Activities conducted the previous year including, but not limited to:
    - Project description summary, including type of project, types of environmental impacts (i.e., natural communities, Covered Species, modeled habitats), compliance monitoring contractor, and avoidance, minimization, and mitigation measures implemented during the project.
- Total impacts to Covered Species and/or their modeled habitat as a result of Covered Activities in the previous year.
- Total impacts, including cumulative totals, to nonbiological resources as required by the project permitting agency. Total impacts, including cumulative totals, to Covered Species and/or their modeled habitat as a result of Covered Activities to date since commencement of the DRECP (e.g., the effective date).
- Summary of avoidance and minimization measures implemented in relation to Covered Activities in the previous year, including:
    - Implementation of environmental compliance monitoring programs;
    - Implementation of environmental training for compliance monitors and contractor education;

  - Results of compliance monitoring programs, including successes and problems or issues in implementing avoidance and minimization measures;
  - Variances to authorized Covered Activities granted during compliance monitoring;
  - Description of compliance contractors; and
  - Cumulative totals of the implemented avoidance and minimization measures to date, since commencement of the DRECP (e.g., the effective date).
- Conservation measures initiated, continued, or completed in the previous year, including habitat additions to the Reserve System and management actions.
- Conservation measures initiated, continued, or completed to date (cumulative totals) since commencement of the DRECP.
- Conservation measures planned to be initiated, continued, or completed the next 3 (5?) years.
- A running tabulation of habitat created, restored, protected, or enhanced under the Plan during the previous year and to date since commencement of the DRECP (e.g., the effective date).
- Description of all findings, conclusions, and results of effectiveness monitoring, research, or conservation measures previously undertaken, including an evaluation of any significant issues encountered during effectiveness monitoring.
- Summary of significant communications and interactions among DRECP participants, including the Coordination Group, Adaptive Management Team, Stakeholder Working Group, Partners Working Group, permitting agencies, other state, federal, or local agencies, scientists and other interested parties during the previous year, including formally scheduled meetings, significant issues related to DRECP implementation and/or Covered Activities, conflicts, and resolution of conflicts.
- Description of any enforcement actions taken by the permitting agency(ies) during the previous year.
- Description of expenditures of funds to implement the DRECP during the previous year.
- Description of expenditures of funds to implement the DRECP to date since commencement of the DRECP (e.g., the effective date).
- Description of any activities to secure funding for conservation measures (e.g., grant applications) during the previous year.

- Description of any DRECP modifications or amendments proposed or approved during the previous year.
- Summary of all approved DRECP modifications and amendments approved to date, including a brief description of the action and the year it was approved.
- Description of any clerical corrections or errata made to the DRECP during the previous year.

The results of effectiveness monitoring will be analyzed and reported by the Adaptive Management Team to the Coordination Group to be included in the annual reports prepared by the Coordination Group. The annual reports prepared by the Coordination Group will include a description of the effectiveness monitoring conducted the previous year and to date since commencement of the DRECP (e.g., the effective date). The report(s) for effectiveness monitoring prepared by the Adaptive Management Team will include at minimum:

- Data and information about who collected the data and the frequency, timing, and duration of data collection.
- A description of the data analysis and results.
- Synthesis/integration of the year's monitoring and management results with previous years as applicable (e.g., analyzing apparent trends).
- Identification of any significant problems or successes with the program that may alter the monitoring and management program approach.
- Suggested changes/revisions to the monitoring and management program, if any, based on the points listed above.
- Documentation of changed or unforeseen circumstances that occurred during the previous reporting year and how they were addressed.
- Discussion of triggers for adaptive management and how they were implemented.

II.3.1.5.8 Modifications and Amendments

DRECP Administrative Changes, and Conservation Program Modifications and Amendments

It is anticipated that the DRECP conservation program will require periodic administrative changes and modifications and amendments during implementation. Administrative changes refer to internal changes or corrections that would not require approval by the USFWS, CDFW or BLM. Modifications are changes that do not significantly change or affect the DRECP conservation program. Modifications can occur administratively by the Coordination Group and do not require formal amendment of the LUPA, GCP, or NCCP.

However, BLM must approve any modifications to the LUPA; USFWS must approve any modifications to the GCP; and CDFW must approve any modifications of the NCCP. These agencies are the "approval agencies" for each plan.

Major changes to the DRECP's conservation program will require a formal amendment to the LUPA, GCP, the NCCP or all three.

Administrative changes, modifications, and amendments are described more fully below.

Administrative Changes

Administrative changes refer to internal changes or corrections to the LUPA, GCP, or NCCP that are not substantive enough to require approval by the approval agencies. These changes will be tracked by the Coordination Group and reported in the annual reports.

Administrative changes may include, but are not limited to:

- Revisions of maps or exhibits to correct errors in mapping, or to reflect changes previously approved by the approval agencies in the DRECP environmental documents.
- Clerical changes and/or corrections of typographic, grammatical, and similar editing errors that do not change the intended meaning of the DRECP and its conservation program.
- Day-today monitoring and management adjustments in response to changing conditions, such as, minor adjustments to monitoring intensity or frequency, irrigation schedules, or initiating invasive species controls.
- Adopting revised USFWS, CDFW, or BLM monitoring protocols if it is determined that the revised protocol does not conflict with the prior protocols approved by the Agencies (e.g., by reducing the ability to detect a species).
- Adjustments in implementation fees to reflect cost increases or decreases.

Modifications

Modifications are changes that do not significantly alter or affect the DRECP conservation program. Modifications can occur administratively by the Coordination Group and do not require formal amendment of the LUPA, GCP or NCCP, but they do require the approval of the approval agencies. Modifications to the DRECP may include, but are not limited to:

- Changes to the boundaries of Conservation Priority Areas that the approval agencies conclude are minor and would not alter the analysis of environmental effects, and in particular, the effects of the Covered Activities on natural resources, contained in

the DRECP environmental documents (LUPA, GCP, NCCP, EIS and EIR), the USFWS ESA Section 7 biological opinion for the DRECP, and the NCCP findings by CDFW. Any combination of adding and removing land from the Conservation Priority Areas must not result in a net loss of acreage or long-term habitat value.

- Updates to biological baseline data, including land cover, Covered Species occurrences that are consistent with the expectations of the Plan.
- Minor modifications of Covered Activities that do not require additional CEQA, NEPA, NCCPA or ESA analysis, such as improvements to renewable energy technologies that result in fewer impacts than existing technologies.
- Minor modifications to the BGOs in response to monitoring and adaptive management that do not require additional CEQA, NEPA, NCCPA or ESA analysis.
- Updating survey protocols.
- Minor modifications to reporting and monitoring requirements.
- Transfer of conservation easement(s) on lands to another entity approved by, and on terms acceptable to, the Wildlife Agencies that ensure the permanent protection of such lands for conservation purposes consistent with the DRECP and the terms of the applicable conservation easement.
- Transfer of fee title to conserved lands within the DRECP Conservation Area that are covered by an executed and recorded conservation easement to an entity approved by, and which contains terms acceptable to, the Wildlife Agencies that ensure the permanent protection of such lands for conservation purposes consistent with the DRECP and the terms of the applicable conservation easement.
- Changes to the membership of the Adaptive Management Team, Partners Working Group, Stakeholder Working Group, and other working groups.
- Other types of modifications that all of the approval agencies agree are minor in relation to the DRECP.

Minor modifications must not result in net loss of habitat value in the reserve or otherwise reduce the effectiveness of the conservation program. In most cases, a minor modification should improve the effectiveness of the program.

The Coordination Group will maintain an appropriate record of all modifications to the DRECP and permit(s).

Amendments

Any proposed changes to the DRECP conservation program that do not meet the criteria described for administrative changes or modifications would require an amendment of the

LUPA, GCP, the NCCP, or all three. The LUPA, GCP, and NCCP may be amended in accordance with the applicable legal requirements of the FLPMA, ESA, the NCCPA, NEPA, and CEQA. An amendment would require a formal review and approval process, including public review, NEPA and CEQA compliance, federal Section 7 consultation, and revised CDFW NCCP findings, as appropriate.

Examples of actions that would require an amendment to the DRECP conservation program include, but are not limited to, the following:

- Significant reserve boundary revisions that could reduce reserve acreage or function.
- Significant changes to Covered Activities (e.g., construction methods, modified technologies, operations and maintenance, etc.) that were not that were not analyzed as part of the original DRECP and would result in material changes to the Plan and/or new or different potentially significant impacts to the environment.
- Take of Covered Species and/or their habitat beyond levels authorized in the permit(s).
- Changes in funding or implementation schedule.
- Adding or removing a species from the list of Covered Species.

II.3.1.6 Obtaining Federal ESA and NCCPA Take Authorizations for Covered Activities

The DRECP provides a basis for the issuance of authorizations under ESA and the NCCPA for the take of Covered Species resulting from Covered Activities. Proponents of proposed renewable energy generation and transmission projects, and related projects and activities, that fall within the description of Covered Activities in Section III.3.1.4 may apply for a take authorization under the DRECP. To obtain a take authorization, an eligible project must follow the applicable application process and must comply with all applicable DRECP requirements, including the avoidance, minimization and mitigation measures for Covered Species. The DRECP's substantive requirements (avoidance, minimization, and mitigation measures, etc.) for take authorizations for Covered Activities are the same regardless of whether a Covered Activity is proposed on BLM land, CSLC lands, or other public or private land. However, the *procedure* for obtaining take authorizations will vary somewhat depending on the ownership of the land on which a Covered Activity is proposed and whether the Covered Activity is subject to CEC jurisdiction. This section explains how project-specific federal and state take authorizations can be obtained under the DRECP, including the application process that must be followed and the substantive requirements that apply.

This section includes the following:

- Description of how take will be authorized for Covered Activities on BLM lands (LUPA and NCCP)
- Description of how take will be authorized for Covered Activities on nonfederal land (NCCP, GCP, and CEC and CSLC Covered Activities for which incidental take would be authorized under the NCCP or GCP)
- Take allocation assumptions and approach

II.3.1.6.1 Take Authorization for Covered Activities on BLM Land (LUPA and NCCP)

All activities proposed on BLM land, including but not limited to Covered Activities, must comply with applicable BLM land use plans, as amended by the LUPA. Activities proposed by a qualified individual, business or government agency over, under, on, or through BLM lands may apply for a ROW authorization by following the ROW approval process pursuant to 43 CFR Part 2800 and applicable policies at the time of application. The LUPA includes DRECP CMAs that apply on BLM land, such that compliance with BLM land use plans will require implementation of the DRECP's CMAs for Covered Species, including measures to avoid, minimize and mitigate take of Covered Species. Project siting, design and operation must adhere to appropriate CMAs for Covered Species, and for recreation, cultural, and other resources, to receive approval of a ROW to use BLM land.

Complying with applicable BLM land use plans will provide the basis for obtaining incidental take authorizations for Covered Species under the DRECP, in accordance with Section 7 of ESA. For purposes of obtaining a take authorization under state law, proponents of Covered Activities must also follow the appropriate State application process. Regardless of which state application process applies, however, federal and state application process will be coordinated, and the same substantive requirements will apply for both federal and state take authorizations for Covered Species.

II.3.1.6.1.1 Federal Take Authorization for Covered Activities on BLM Lands

The USFWS will prepare a biological opinion for the LUPA pursuant to Section 7 of ESA. The biological opinion will take into consideration all aspects of the LUPA that are pertinent to an analysis of the LUPA's effect on species listed pursuant to ESA, specifically including CMAs for Covered Species included in the LUPA. The USFWS' biological opinion is expected to include an incidental take statement that will exempt Covered Activities implemented on BLM land from ESA's take prohibition, provided the Covered Activities are implemented in accordance with the CMAs for Covered Species. Other activities proposed on BLM lands would be covered under a project-specific incidental take statement. BLM's approval of a

ROW for a proposed activity, including conditions of approval that ensure implementation of appropriate CMAs for Covered Species, can therefore provide take coverage for the activity under ESA.

The USFWS will work with BLM and project applicants to address compliance with the Eagle Act for Covered Activities proposed on BLM lands. Where appropriate, project specific analyses including the development of an Eagle Conservation Plan and additional analysis to comply with NEPA will be conducted to support applications for take permits pursuant to the Eagle Act permitting regulations.

II.3.1.6.1.2 State Take Authorization for Covered Species from Covered Activities within CEC's Jurisdiction

As part of its exclusive jurisdiction under state law over thermal generation projects with the capacity to generate 50 megawatts or more, the CEC has the authority to issue take authorizations based on an NCCP that has been approved by CDFW. The CEC will incorporate DRECP CMA's as conditions of approval in its licensing process for Covered Activities in the Plan Area. Covered Activities within CEC jurisdiction may thereby obtain state take authorizations through the CEC's licensing process. For Covered Activities that are within CEC jurisdiction and are proposed on BLM lands, the CEC and BLM will coordinate the CEC's licensing process with BLM's ROW process, such that BLM and CEC review of proposals for Covered Activities will occur concurrently, information requirements regarding impacts to Covered Species will be consistent, and project conditions and requirements regarding DRECP CMAs will be consistent.

II.3.1.6.1.3 State Take Authorization for Other Covered Activities on BLM Land

For any Covered Activities proposed on BLM land that are not within CEC jurisdiction, a State take authorization based on the NCCP may be obtained by applying to CDFW using the integrated project proposal review process described in Section II.3.1.5.3. CDFW and BLM will coordinate CDFW's application process and BLM's ROW process, such that BLM and CDFW review of project proposals will occur concurrently, information requirements regarding impacts to Covered Species will be consistent, and project conditions and requirements regarding DRECP CMAs will be consistent.

II.3.1.6.2 Take Authorization for Covered Activities on Private Lands and Lands Owned by State Agencies or Local Governments

Covered Activities proposed on private lands and nonfederal public lands are eligible to obtain a federal incidental take authorization under the GCP and a State take authorization under the NCCP. In general, for Covered Activities proposed on such lands, an applicant must apply to the USFWS for a federal take authorization and must apply to

CDFW for a State take authorization, using the integrated project proposal review process described above.

For Covered Activities within the land use authority of a local government, the local government will retain its full discretionary authority. This means that the local land use approval process will continue to apply to the Covered Activity, and the local government will ordinarily be the CEQA lead agency for, and will determine whether to approve, the Covered Activity. Proponents of Covered Activities within the land use authority of a local government may apply for federal take authorizations from the USFWS, and for State take authorizations from CDFW, during and in coordination with the local environmental review and land use approval process.

Local and state agencies with discretionary approval authority over Covered Activities may apply for state and federal take authorizations that can be extended to Covered Activities within their discretionary authority. Local and State agencies can do so either by applying for take authorizations based on the programmatic GCP and NCCP components of the DRECP or by developing a regional NCCP and directly applying for incidental take permits under the GCP with additional Covered Activities. Where Covered Activities are within the discretionary authority of a local or state agency that has received a federal take authorization under the GCP or a state take authorization under the NCCP, proponents of Covered Activities must apply to that local or State permittee for coverage under its take authorization.

Two state agencies have applied for take authorizations under the GCP and/or NCCP components of the DRECP. The CEC has applied for a federal take authorization under the GCP, and the CSLC has applied for both a federal take authorization under the GCP and a State take authorization under the NCCP. Currently, no local agencies have applied for take authorizations under the GCP or NCCP. Federal agencies will not apply for such take authorizations because they are not required to obtain take authorizations under State law and, under ESA, cannot obtain take authorizations under the GCP. Instead, federal agency actions that would result in take of a listed species must obtain an exemption from ESAs take prohibition under Section 7 of ESA.

Once the CSLC has received its federal and state take authorizations, proponents of Covered Activities proposed on CSLC lands must apply to the CSLC through its leasing process to obtain coverage under the CSLC federal and state take authorizations.

Once the CEC has received its federal take authorization, proponents of Covered Activities within the CEC's jurisdiction must apply to the CEC through its licensing process to obtain coverage under the CEC's federal take authorization. When CEC permits a project under the NCCPA, CEC's certification stands in lieu of CDFW's permitting process and the local government agency's permitting process.

II.3.1.6.2.1 CEC Covered Activities

The CEC will receive a federal take authorization from the USFWS based on the GCP, which will cover Covered Activities that are within the CEC's jurisdiction and are proposed on nonfederal public lands or on private lands within the Plan Area. Because the CEC has exclusive State jurisdiction over thermal power plants that have the capacity to generate 50 megawatts or more, the CEC is not required to obtain a State take authorization. Instead, it may itself issue State take authorizations for Covered Activities under its jurisdiction in accordance with the NCCP and in coordination with CDFW. For Covered Activities proposed on nonfederal public lands or on private lands, a project proponent may, through the CEC's licensing process, obtain coverage under the CEC's federal take authorization and obtain a state take authorization. The CEC's licensing process will ensure that proposed Covered Activities comply with GCP and NCCP requirements, including, for example, a requirement that applicable DRECP CMAs be included as conditions of licensing for Covered Activities. Project proponents may obtain coverage under the CEC's federal take authorization and receive a state take authorization by complying with these requirements and including applicable avoidance, minimization and mitigation measures, and other applicable DRECP standards and measures in an integrated projects proposal, as described in Section II.3.1.5.3.

II.3.1.6.2.2 CSLC Covered Activities

CSLC will receive a federal take authorization from the USFWS based on the GCP and a state take authorization from CDFW based on the NCCP. The federal and state take authorizations will cover Covered Activities on CSLC lands. For Covered Activities proposed on CSLC lands, an applicant may obtain coverage under CLSC's federal and state take authorizations through the CSLC's leasing process. The CSLC's leasing process will ensure that proposed Covered Activities comply with GCP and NCCP requirements and will require applicable DRECP CMAs as terms and conditions of leases for Covered Activities.

Project proponents may obtain coverage under the CSLC's federal take authorization and state take authorization by complying with these requirements and including applicable avoidance, minimization and mitigation measures, and other applicable DRECP standards and measures in proposed Covered Activities, as described in Section II.3.1.6.3.

For Covered Activities proposed on CSLC lands that are within the CEC's jurisdiction (thermal power plants with the capacity to generate 50 megawatts or more), federal and state take authorizations will be provided by the CEC, in accordance with the process and requirements described in Section II.3.1.6.2.1.

II.3.1.6.3 Take Allocation Assumptions and Approach

The final NCCP and GCP will include limits on the total amount of take that can be authorized for Covered Activities under each plan. Because the NCCP covers both federal and nonfederal land, the total amount of take that can be authorized under the NCCP will be larger than the amount of take that can be authorized under the GCP. However, on nonfederal lands where the NCCP and GCP overlap, the NCCP and GCP will have the same take limits. Within the overall limits on authorized take under the NCCP and GCP, CDFW and the USFWS will allocate authorized take in take authorizations issued for Covered Activities. Each permittee will receive a certain take allocation—an amount of take that is authorized in each permit.

This section describes how CDFW and the USFWS will allocate take for Covered Activities under the DRECP and includes the following specific elements related to take allocation:

- Assumptions
- Approach
- Metrics
- Temporal Loss
- Reporting

Assumptions

1. Take will be allocated geographically, generally by ecoregion subarea with exceptions for certain species, such as desert tortoise where allocation by recovery unit is the more appropriate geographic unit, or golden eagle where three geographic units have been identified in the Plan Area.
2. Take will be allocated to each DRECP component as appropriate (e.g., LUPA, NCCP, and GCP).
3. Within the take allocation for each DRECP component take will be allocated to each permittee as appropriate (e.g., CEC, CSLC and future permittees) or to BLM and its applicants.
4. Take will be allocated based on estimated take levels AFTER application of avoidance and minimization CMAs.
5. Methods for quantifying take will use best available information and will be documented for each species or species surrogate (with modeled suitable habitat the typical species surrogate for DRECP). Predicted (modeled) and actual extent of suitable habitat and relationship to take allocation will be continually evaluated and

documented during DRECP implementation but such evaluation will not change the take limit.

6. Take will be allocated for renewable energy generation and transmission Covered Activities.
7. Take allocation will include amounts necessary to cover conservation actions undertaken as part of the DRECP.
8. The LUPA ESA Section 7 consultation/Biological Opinion will consider the effects to federally listed species of the LUPA in its entirety, including the effects of all land allocations in the LUPA. The LUPA incidental take statement will apply only to renewable energy generation Covered Activities within DFAs and transmission Covered Activities within and outside DFAs; non-renewable projects under the LUPA will be addressed on a project-by-project basis through subsequent Section 7 consultation processes.

Approach

Take allocation under the DRECP will include a Plan-wide take limit with allocations for each species to each DRECP component (LUPA, NCCP, GCP) at the ecoregion subarea level (or other geographic unit such as recovery unit if appropriate for a particular species). Take allocations for permittees will be part of the take allocation for the DRECP component under which the permittee receives a permit. For example, the take authorized in a permit issued under the GCP will come from the GCP's overall take allocation.

Table II.3-32 lists each species for which take will be allocated and indicates the ecoregion subarea, and if applicable, the geographic unit within which the species is located.

Each DRECP component or permittee under a DRECP component will have an allocation "bank account" at the ecoregion subarea level with an initial take allocation and the ability to withdraw additional take from the ecoregion subarea bank as needed until the bank account is empty. The initial take allocation to each DRECP component or permittee will be assured for 10 years, with each component or permittee under the obligation to "use it or lose it." In this respect, take allocation will be phased with the total take allocated to each component or permittee analyzed and authorized at the time of permit issuance with the initial amount allocated for the first 10 years and additional approvals up to the maximum over the permit term. Table II.3-33 is a template that illustrates how take will be allocated using this approach.

In contrast to other Covered Species, the take limit for golden eagles will apply to all activities with Eagle Act authorization within the golden eagle geographic unit, and will not be limited to take associated with DRECP Covered Activities. In other words, take resulting

from authorized activities that are not covered by the DRECP will be counted against the take limit established for golden eagles, and take of golden eagles associated with DRECP Covered Activities will only be authorized if the take limit is not reached. As described in Appendix H, the annual take limit for golden eagles will be reset based on estimated and recorded loss of individuals and/or territories. For projects where on-going take is anticipated (e.g. wind), take will be authorized for multiple years (i.e., will not be reset annually) and will be subtracted from the available annual balance in the global bank for the anticipated life of the project or permit (DRECP) term.

To ensure that any single project does not consume all the available eagle take within a region and result in the preclusion of other activities that are likely to take eagles in that region and to minimize take of eagle territories (which counts as take of 4.26 eagles), there will also be a project-level take cap for each region. The estimated (authorized) amount of take for any single project cannot exceed more than 40% of the total regional take cap. The 40% is calculated based on the maximum allocated regional take for the year (i.e., it is not calculated based on the amount of regional take remaining when a project comes in for approval).

Table II.3-32
DRECP Covered Species for Which Take Will Be Allocated

Covered Species	Ecoregion Subarea	Species-Specific Regions
Amphibian/Reptile		
Desert tortoise	Cadiz Valley and Chocolate Mountains	Colorado Desert
	Imperial Borrego Valley	Colorado Desert
	Kingston and Funeral Mountains	Eastern Mojave
	Mojave and Silurian Valley	Western Mojave
	Owens River Valley	Western Mojave
	Panamint Death Valley	Western Mojave
	Pinto Lucerne Valley and Eastern Slopes	Western Mojave
	Piute Valley and Sacramento Mountains	Colorado Desert
	Providence and Bullion Mountains	Colorado Desert/Western Mojave
	West Mojave and Eastern Slopes	Western Mojave
Flat-tailed horned lizard	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
Mojave fringe-toed lizard	Cadiz Valley and Chocolate Mountains	—
	Kingston and Funeral Mountains	—
	Mojave and Silurian Valley	—
	Panamint Death Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	Piute Valley and Sacramento Mountains	—

Table II.3-32
DRECP Covered Species for Which Take Will Be Allocated

Covered Species	Ecoregion Subarea	Species-Specific Regions
	Providence and Bullion Mountains	—
	West Mojave and Eastern Slopes	—
Tehachapi slender salamander	West Mojave and Eastern Slopes	—
	Bird	
Bendire's thrasher	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Kingston and Funeral Mountains	—
	Mojave and Silurian Valley	—
	Owens River Valley	—
	Panamint Death Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	Piute Valley and Sacramento Mountains	—
	Providence and Bullion Mountains	—
	West Mojave and Eastern Slopes	—
Burrowing owl	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Kingston and Funeral Mountains	—
	Mojave and Silurian Valley	—
	Owens River Valley	—
	Panamint Death Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	Piute Valley and Sacramento Mountains	—
	Providence and Bullion Mountains	—
	West Mojave and Eastern Slopes	—
California black rail	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Piute Valley and Sacramento Mountains	—
California condor	Owens River Valley	—
	Panamint Death Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	West Mojave and Eastern Slopes	—
Gila woodpecker	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Piute Valley and Sacramento Mountains	—
Golden eagle	Cadiz Valley and Chocolate Mountains	Region 2
	Imperial Borrego Valley	Region 3

Table II.3-32
DRECP Covered Species for Which Take Will Be Allocated

Covered Species	Ecoregion Subarea	Species-Specific Regions
	Kingston and Funeral Mountains	Region 2
	Mojave and Silurian Valley	Region 2
	Owens River Valley	Region 1
	Panamint Death Valley	Region 1
	Pinto Lucerne Valley and Eastern Slopes	Region 2
	Piute Valley and Sacramento Mountains	Region 2
	Providence and Bullion Mountains	Region 2
	West Mojave and Eastern Slopes	Region 1
Greater sandhill crane	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Piute Valley and Sacramento Mountains	—
	Providence and Bullion Mountains	—
Least bell's vireo	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Kingston and Funeral Mountains	—
	Mojave and Silurian Valley	—
	Owens River Valley	—
	Panamint Death Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	Piute Valley and Sacramento Mountains	—
	Providence and Bullion Mountains	—
	West Mojave and Eastern Slopes	—
Mountain Plover	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	West Mojave and Eastern Slopes	—
Southwestern willow flycatcher	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Mojave and Silurian Valley	—
	Owens River Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	Piute Valley and Sacramento Mountains	—
	West Mojave and Eastern Slopes	—
Swainson's hawk	Imperial Borrego Valley	—
	Mojave and Silurian Valley	—
	Owens River Valley	—
	Panamint Death Valley	—

Table II.3-32
DRECP Covered Species for Which Take Will Be Allocated

Covered Species	Ecoregion Subarea	Species-Specific Regions
	Pinto Lucerne Valley and Eastern Slopes	—
	West Mojave and Eastern Slopes	—
Tri-colored blackbird	Imperial Borrego Valley	—
	Mojave and Silurian Valley	—
	Panamint Death Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	Providence and Bullion Mountains	—
	West Mojave and Eastern Slopes	—
Yellow-billed cuckoo	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Kingston and Funeral Mountains	—
	Mojave and Silurian Valley	—
	Owens River Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	Piute Valley and Sacramento Mountains	—
	Providence and Bullion Mountains	—
	West Mojave and Eastern Slopes	—
Yuma clapper rail	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Piute Valley and Sacramento Mountains	—
	West Mojave and Eastern Slopes	—
Fish		
Desert pupfish	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
Mohave tui chub	Kingston and Funeral Mountains	—
	Mojave and Silurian Valley	—
	West Mojave and Eastern Slopes	—
Owens pupfish	Owens River Valley	—
Owens tui chub	Owens River Valley	—
Mammal		
Bighorn sheep–intermountain habitat	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Kingston and Funeral Mountains	—
	Mojave and Silurian Valley	—
	Owens River Valley	—
	Panamint Death Valley	—

Table II.3-32
DRECP Covered Species for Which Take Will Be Allocated

Covered Species	Ecoregion Subarea	Species-Specific Regions
	Pinto Lucerne Valley and Eastern Slopes	—
	Piute Valley and Sacramento Mountains	—
	Providence and Bullion Mountains	—
	West Mojave and Eastern Slopes	—
Bighorn sheep–mountain habitat	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Kingston and Funeral Mountains	—
	Mojave and Silurian Valley	—
	Owens River Valley	—
	Panamint Death Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	Piute Valley and Sacramento Mountains	—
	Providence and Bullion Mountains	—
	West Mojave and Eastern Slopes	—
California leaf-nosed bat	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Kingston and Funeral Mountains	—
	Mojave and Silurian Valley	—
	Panamint Death Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	Piute Valley and Sacramento Mountains	—
	Providence and Bullion Mountains	—
	West Mojave and Eastern Slopes	—
Mohave ground squirrel	Mojave and Silurian Valley	—
	Owens River Valley	—
	Panamint Death Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	West Mojave and Eastern Slopes	—
Pallid bat	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Kingston and Funeral Mountains	—
	Mojave and Silurian Valley	—
	Owens River Valley	—
	Panamint Death Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	Piute Valley and Sacramento Mountains	—

Table II.3-32
DRECP Covered Species for Which Take Will Be Allocated

Covered Species	Ecoregion Subarea	Species-Specific Regions
	Providence and Bullion Mountains	—
	West Mojave and Eastern Slopes	—
Townsend's big-eared bat	Cadiz Valley and Chocolate Mountains	—
	Imperial Borrego Valley	—
	Kingston and Funeral Mountains	—
	Mojave and Silurian Valley	—
	Owens River Valley	—
	Panamint Death Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	Piute Valley and Sacramento Mountains	—
	Providence and Bullion Mountains	—
	West Mojave and Eastern Slopes	—
Plant		
Alkali mariposa-lily	Owens River Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	West Mojave and Eastern Slopes	—
Bakersfield cactus	West Mojave and Eastern Slopes	—
Barstow woolly sunflower	Mojave and Silurian Valley	—
	West Mojave and Eastern Slopes	—
Desert cymopterus	Mojave and Silurian Valley	—
	West Mojave and Eastern Slopes	—
Little San Bernardino Mountains linanthus	Imperial Borrego Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
Mojave monkeyflower	Mojave and Silurian Valley	—
	Panamint Death Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	Providence and Bullion Mountains	—
	West Mojave and Eastern Slopes	—
Mojave tarplant	Owens River Valley	—
	Pinto Lucerne Valley and Eastern Slopes	—
	West Mojave and Eastern Slopes	—
Owens Valley checkerbloom	Owens River Valley	—
	West Mojave and Eastern Slopes	—
Parish's daisy	Pinto Lucerne Valley and Eastern Slopes	—
	West Mojave and Eastern Slopes	—
Triple ribbed milk vetch	Pinto Lucerne Valley and Eastern Slopes	—

INTENTIONALLY LEFT BLANK

Table II.3-33
DRECP Take Allocation Ledger Template

Covered Species[1]	Ecoregion Subarea[1]	Species-Specific Regions[1]	Total Suitable Habitat	Total Plan-Wide (and NCCP) Take		Total BLM LUPA Take			GCP Take on Nonfederal Lands						
									Tatal GCP Take		*CEC Applicatian*		*CSLC Applicatian*		
				Siting, Canstructian, and Terrestrial Operatianal Impacts	*Bird and Bat Operatianal Impacts*	*Siting, Canstructian, and Terrestrial Operatianal Impacts*	*Bird and Bat Operatianal Impacts*	*BLM Initial Take Allacatian*	*Siting, Canstructian, and Terrestrial Operatianal Impacts*	*Bird and Bat Operatianal Impacts*	*CEC Take Allacatian*	*CEC Initial Take Allacation*	*CSLC Take Allacatian*	*CSLC Initial Take Allacatian*	*Future Available Take*

[1] See Table II.3-32 for full list.

INTENTIONALLY LEFT BLANK

The following assumptions are incorporated in this approach:

- The Plan-wide take limit may not be exceeded.
- Take allocation can be transferred between permittees under the DRECP components within an ecoregion subarea with review and documentation through the DRECP Coordination Group.
- Permittees may voluntarily surrender their allocation at any time.
- Take may be transferred between ecoregion subareas under limited circumstances.
- If take limit is reached for a particular species in a particular ecoregion subarea, any further action would have to avoid that particular species before the project could proceed.
- Effects of transmission would be deducted from the take allocation based on the location of impacts and made available to transmission applicants.

Metrics

In general, the metric for take resulting from the construction of Covered Activities is the estimated ground disturbance of modeled suitable habitat that will result after application of avoidance and minimization CMAs. The metrics for take resulting from the operation of Covered Activities is the indirect loss of terrestrial habitat values and the estimated mortality for avian species (birds and bats).

For golden eagle, the metric for authorizing and tracking take will be measured as birds/year. Any anticipated loss of an eagle territory will be translated to birds/year (e.g., the loss of a territory will equate to the loss of 4.26 birds/year). See Appendix H for a detailed description of the approach for authorizing take of golden eagle.

Temporal Loss

The DRECP addresses the potential for temporal loss of resource values from the time they are affected by implementation of Covered Activities until appropriate compensatory activities are put in place. The requirement under DRECP is that compensation activities be initiated and/or completed within 12 months of the time the impact occurs (e.g., ground disturbance for construction activities or mortality due to operations), with a 6 month extension permitted subject to approval by the authority issuing the permit/approval for the project.

Requirements for conservation actions may vary. For example:

- For land acquisition forms of compensation, the entity receiving the fee and responsible for acquisition, or the project developer if such developer has elected to complete land acquisition in lieu of paying a fee, must demonstrate completion of

land acquisition or conservation easement and conveyance to the appropriate land management entity.

- For habitat restoration/enhancement forms of compensation, the appropriate entity must demonstrate completion of installation of plant materials and that initial (3–6 months) success criteria are met, recognizing full satisfaction of success criteria may extend for several years.
- For non-acquisition forms of compensation, time considerations may vary depending on whether the activity is action oriented (e.g., installation of fencing) or non-action oriented (e.g., a durability mechanism).

Requirements to address temporal loss under the DRECP may also address agency-specific requirements regarding rough proportionality (get ahead/stay ahead) and impact/mitigation (stay even).

Reporting

Status of take allocation and associated tracking will be part of DRECP compliance monitoring as documented in annual reporting. See Section II.3.1.3.4.1 for compliance monitoring requirements.

II.3.1.7 Regulatory Assurances Under the NCCP and the GCP

II.3.1.7.1 Regulatory Assurances Under the NCCP

Introduction

Within the context of the NCCPA, the purpose of the DRECP is to provide for the conservation of the Covered Species and the avoidance, mitigation, minimization, and compensatory measures required in connection with the incidental taking of Covered Species in the course of otherwise lawful and permitted activities within the Plan Area. The NCCPA provides that CDFW "may provide assurances for plan participants commensurate with long-term conservation assurances and associated implementation measures pursuant to the approved plan." (California Fish and Game Code, Section 2820, subd. [f]) These assurances are intended to provide both a degree of certainty regarding the overall costs associated with species mitigation and other conservation measures and durability and reliability to agreements reached between permittees and CDFW.

The assurances provided under the NCCPA do not prohibit or restrain CDFW, or any other public agency, from taking additional actions to protect or conserve Covered Species. CDFW and other public agencies may use the variety of tools at their disposal and take actions to reduce adverse impacts to ensure the needs of the Covered Species affected by unforeseen circumstances are adequately addressed.

Regulatory Assurances under the NCCPA

Under the NCCPA, CDFW may provide assurances to permittees (those plan participants who receive Section 2835 permits and execute an implementation agreement) commensurate with the long-term conservation assurances and associated implementation measures of the DRECP. In determining the level of assurances, if any, to provide, CDFW shall consider all of the following factors:

- The level of knowledge of the status of the Covered Species and natural communities
- The adequacy of analysis of the impact of take on Covered Species
- The use of the best available science to make assessments about the impacts of take, the reliability of mitigation strategies, and the appropriateness of monitoring techniques
- The appropriateness of the size and duration of the plan with respect to quality and amount of data
- The sufficiency of mechanisms for long-term funding of all components of the plan and contingencies
- The degree of coordination and accessibility of centralized data for analysis and evaluation of the effectiveness of the plan
- The degree to which a thorough range of foreseeable circumstances are considered and provided for under the adaptive management program
- The size and duration of the plan. (California Fish and Game Code, Section 2820, subd. [f][1][A]–[H])

Based on an evaluation of these factors, CDFW will determine whether to provide regulatory assurances and, if so, the proper scope and duration of such assurances.

The assurances provided to eligible permittees will seek to ensure that if there are unforeseen circumstances, no additional financial obligations or restrictions on the use of resources will be required of the eligible permittees without their consent. The NCCPA expressly states:

> If there are unforeseen circumstances, additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources shall not be required without the consent of the plan participants for a period of time specified in the implementation agreement, unless the department determines that the plan is not being implemented

consistent with the substantive terms of the implementation agreement. (California Fish and Game Code, Section 2820, subd. [f][2])

Notwithstanding California Fish and Game Code Section 2820(f), however, the NCCPA requires that CDFW suspend or revoke any permit, in whole or in part, if the continued take of a Covered Species would jeopardize its continued existence.

Eligible NCCP Permittees under the DRECP

Under the NCCPA, regulatory assurances may be provided to "plan participants" (California Fish and Game Code, Section 2820, subd. [f]). Prior to approval of the NCCP, a plan participant "means a signatory to the planning agreement," and upon approval of the NCCP, a plan participant "means the permittee and any local agency that is a signatory to the implementing agreement" (California Fish and Game Code, Section 2805, subd. [j][1]–[2]).

As a plan participant and permittee, regulatory assurances will be provided to CSLC according to terms and conditions to be set forth in the implementation agreement to be executed by CDFW, CSLC, and other implementing agencies as applicable.

Assurances may also be provided subsequently to individual project proponents seeking project-specific Section 2835 permits and future local government permittees seeking Section 2835 permits; provided, however, that the existence, scope, and duration of such assurances will be set forth in an implementation agreement to be executed by CDFW, the individual project proponent or local government permittee, and other implementing agencies if applicable.

Changed Circumstances

Ecological conditions in the Plan Area are likely to change as a result of future events and circumstances that may occur during the course of implementing the DRECP. CDFW seeks to identify circumstances that are reasonably foreseeable and could adversely affect the NCCP Reserve and other conservation measures in the Plan Area. To ensure successful implementation of the conservation strategy, the DRECP sets out measures designed to respond to these anticipated future changes.

Under the NCCPA, changed circumstances are defined as "reasonably foreseeable circumstances that could affect a covered species or geographic area covered by the plan" (California Fish and Game Code, Section 2805, subd. [c]). If a changed circumstance occurs within the permit area, CDFW may determine that additional conservation or mitigation measures are necessary. If such measures were addressed in the DRECP, their implementation is required. If such measures were absent from the Plan, CDFW will not require a permittee to undertake any additional conservation or mitigation without the

consent of the permittee as long as the Plan is found to be properly implemented by the permittee, to the extent the permittee is responsible for implementation. Properly implemented means that the commitments and the provisions of the DRECP, the EIR/EIS, the implementing agreement, and the Section 2835 permit have been or are being fully implemented to the extent they are the responsibility of the permittee.

Process to Identify Changed Circumstances

Either the Coordination Group or CDFW may identify the onset of a changed circumstance, using information obtained from monitoring, scientific study, or other sources. Once the Coordination Group or CDFW is aware that a changed circumstance has occurred or is likely to occur, they will take immediate steps to investigate and confirm the event. If a changed circumstance appears to have occurred, the Coordination Group or CDFW will notify the Executive Policy Group, the Adaptive Management Team, the Partners Working Group, and the Stakeholder Working Group.

After documenting the occurrence of a changed circumstance, the Coordination Group or CDFW will determine specific responsive actions that are consistent with the requirements set forth in this section and develop a schedule for their implementation.

Changed Circumstances under the NCCP

Section II.3.1.7.3 lists changed circumstances and planned responses considered under the DRECP for both the NCCP and the GCP.

Unforeseen Circumstances

Under the NCCPA, unforeseen circumstances are defined as "changes affecting one or more species, habitats, or natural communities or the geographic area covered by a conservation plan that could not reasonably have been anticipated at the time of plan development, and that result in a substantial adverse change in the status of one or more covered species" (California Fish and Game Code, Section 2805, subd. [k]).

In the event of unforeseen circumstances during the permit term, amendments to the NCCP may be proposed by the Coordination Group or CDFW to address these circumstances. CDFW and the Coordination Group will work together to identify opportunities to redirect resources to address unforeseen circumstances. However, it is intended that CDFW will not:

1. Require the commitment of additional land, water, or financial compensation by the permittees other than those agreed to elsewhere in the NCCP; or

2. Impose additional restrictions on the use of land, water, or natural resources otherwise available for use by the permittees under the original terms of the NCCP to mitigate the effects of the Covered Activities.

The extent to which CDFW provides such assurances will be set forth in the implementation agreement to be signed by each permittee. Permittees will be entitled only to those assurances that are set forth in the implementation agreement.

II.3.1.7.2 Regulatory Assurances Under the GCP

Assurances for Unforeseen and Changed Circumstances ("No Surprises" Rule)

The purpose of the GCP is to provide for the conservation of Covered Species through implementation of measures required to minimize and mitigate the incidental taking of Covered Species in the course of otherwise lawful and permitted activities within the GCP Permit Area. In accordance with the Habitat Conservation Plan ("No Surprises") Assurances Rule (63 FR 8859, as codified in 50 CFR 17.3, 17.22[b] and 17.32[b]), except as otherwise required by law and/or provided under the terms of the GCP and except for unforeseen circumstances as defined in the regulations cited above, no further mitigation or compensation shall be required by USFWS to address impacts of Covered Activities undertaken by any GCP permittee under the ESA. Please refer to Appendix M, General Conservation Plan, for details on USFWS regulatory assurances under "No Surprises."

No Surprises assurances are attached to an incidental take permit upon issuance; each permittee under the GCP would receive No Surprises assurances. The USFWS will not require from any GCP permittee the commitment of additional land or financial compensation or additional restrictions on the use of land or other natural resources with regard to Covered Activities and their impact on Covered Species beyond that provided by the permit issued under the GCP, as long as the permittee is properly implementing the terms and conditions of the permit, the GCP. In the event that the USFWS makes a finding of "unforeseen circumstances" and such unforeseen circumstances warrant the requirement of additional mitigation, enhancement, or compensation measures, any such additional measures would be restricted to modifying the management of the permittee's mitigation lands within the DRECP Conservation Area, and shall be the least burdensome measures available to address the unforeseen circumstances.

"Unforeseen circumstances" (50 CFR 17.3) means any significant, unanticipated adverse change in the status of GCP Covered Species or their habitats or any significant unanticipated adverse change in impacts within the GCP Permit Area in accordance with 63 FR 8859 (February 23, 1998). In contrast, "changed circumstances" are defined under the No Surprises Rule as changes in circumstances affecting a Covered Species or geographic

area covered by a conservation plan, such as the GCP, that can reasonably be anticipated and planned for by permit applicants and USFWS.

Changed circumstances potentially affecting permittee Covered Activities or mitigation lands within the DRECP Conservation Area are defined as future events that may be reasonably foreseeable to occur during the life of the permit issued under the GCP, and that such an event may negatively affect the Covered Species and/or their habitats. Changed circumstances addressed by the GCP include: (1) prolonged drought; (2) changes in fire frequency, intensity, or extent; (3) increased proliferation of known non-native species and/or invasion by new non-native species; (4) changes in hydrology and groundwater resources (including lowered water tables); (5) changes in renewable energy technologies, or in measures to avoid or minimize adverse impacts to Covered Species; (6) population declines of Covered Species unrelated to implementation of permits issued under the GCP; (7) the general impacts of climate change on each of these circumstances, and (8) new listings of species not covered by the GCP and designation or revision of critical habitat for a Covered or Non-Covered Species. Permittees would be responsible for monitoring, reporting, and responding to changed circumstances on their project sites. The DRECP Coordination Group would be responsible for monitoring, reporting, and responding to changed circumstances in the DRECP Conservation Area through implementation of the MAMP.

II.3.1.7.3 Changed Circumstances

This section describes how changed circumstances would be handled under the DRECP and includes a discussion of the following topics:

- Prolonged drought
- Fire (frequency, intensity, extent)
- Non-native species
- Changes to hydrology and groundwater resources
- Renewable energy technologies
- Population declines of Covered Species
- New listings of species not covered under the GCP (including designation or revision of critical habitat for a Covered Species or Non-Covered Species) or the NCCP.

Permittee would be responsible for monitoring, reporting and responding to changed circumstances on their project sites. The DRECP Coordination Group would be responsible for monitoring, reporting and responding to changed circumstances in the DRECP Conservation Area through implementation of the MAMP.

II.3.1.7.3.1 Prolonged Drought

Drought is a cyclical weather phenomenon that is beyond human control. Drought is not uncommon in the California deserts, and it is a phenomenon to which local natural communities and species have adapted over time. Prolonged drought conditions may adversely affect Covered Species if they are unable to adapt.

Risk Assessment

For the purpose of identifying changed circumstances requiring a management response, drought is defined as climatic drought of at least 3 years in length. Drought conditions persisting longer than 3 years are considered conditions of prolonged drought, and will serve as a trigger for closely monitoring the effects of climatic drought on Covered Species and responding as appropriate to ensure authorized take levels for Covered Activities are not exceeded and that progress towards achieving BGOs is not compromised within the DRECP Conservation Area.

Appendix P (Climate Change) generally discusses precipitation records and the general periodicity of dry and wet years in the Mojave and Colorado/Sonoran deserts. Multiyear droughts of statewide scale occur relatively infrequently, and usually last for 3-4 years. For example, since 1900, there have been nine periods of drought for 3 years or more (1918–20, 1923–26, 1928–35, 1947–50, 1959–62, 1976–77, 1987–92, 2001–02, 2007–09) (California Department of Water Resources 2012). Based on these data, and the fact that drought is an expected occurrence in the California deserts, a prolonged drought substantially affecting Covered Species is likely to occur during implementation of the DRECP through 2040. During the first 5 years of DRECP implementation (i.e., the first 5 years after a ROD for a Final DRECP and EIR/EIS is signed), USFWS and CDFW will work with the DRECP Coordination Group and permittees to identify species vulnerable to drought, update the risk assessment, and create a long-term, species-specific or ecoregion-specific response.

Preventive Measures

No measures are available to prevent climatic drought. Measures to ameliorate the effects of prolonged drought may involve providing artificial water sources as feasible for Covered Species such as bighorn sheep that are adversely affected by drought. However, due to the unpredictable yet expected influence of climate change on temperatures and precipitation patterns, the DRECP Coordination Group will implement measures to monitor the effects of drought, as defined above, on Covered Species in the DRECP Conservation Area as part of the MAMP.

Planned Response

If a prolonged climatic drought occurs within the Plan Area, the DRECP Coordination Group will (1) assess the damage caused by the drought within the DRECP Conservation Area, (2) recommend actions to ameliorate the effects of the climatic drought on Covered Species, (3) update the risk assessment, and (4) create a long-term, species-specific or ecoregion-specific response through the adaptive management process outlined in the MAMP.

II.3.1.7.3.2 Fire (Frequency, Intensity, Extent)

A high density of non-native plants, particularly invasive grasses, can facilitate the spread of wildfires in desert habitats where vegetation would otherwise be too sparse. Such fires can adversely alter habitats that have not evolved with natural fire disturbance regimes. There are little or no data on the vulnerability of desert species to increased incidences of wildfire due to the proliferation of non-native plants. Habitat alterations resulting from wildfire often enhance conditions for increased invasion by non-native plants, with impacts across trophic levels that could last decades or longer.

Risk Assessment

For the purpose of identifying changed circumstances requiring a management response, a fire event that may adversely affect Covered Species and their habitats is fire in a natural community that is not typically subjected to fire and is not adapted to it. The occurrence of such a fire in the Plan Area will serve as a trigger for closely monitoring the effects of fire on Covered Species and responding as appropriate to ensure authorized take levels for Covered Activities are not exceeded and that progress towards achieving BGOs is not compromised within the DRECP Conservation Area.

During the first 5 years of DRECP implementation (i.e., the first 5 years after a ROD for a Final DRECP and EIR/EIS is signed), USFWS and CDFW will work with the DRECP Coordination Group and permittees to identify species vulnerable to fire, update the risk assessment, and create a long-term, species-specific or ecoregion-specific response. The DRECP Coordination Group will explore the relationship between areas occupied by non-native plants and historical fire occurrences in the DRECP Conservation Area, and conduct landscape level monitoring under the MAMP to document the occurrence of fire within the Plan Area, including location, frequency, intensity, and extent.

Preventive Measures

For non-fire adapted vegetation communities within the DRECP Conservation Area preventive measures include creating new fuel breaks/fire breaks or redesigning and reconfiguring existing fuel breaks/fire breaks; collaboration among the DRECP

Coordination Group, local fire agencies, and permittees to improve fire suppression preparedness and identify appropriate suppression strategies that minimize habitat damage; and developing effective methods to control establishment and proliferation of non-native plants. The Coordination Group will be responsible for implementing preventive measures on DRECP Conservation Area lands; permittees will be responsible for these activities at their project sites. Due to the unpredictable yet expected influence of climate change on natural desert fire regimes, the DRECP Coordination Group will implement measures to monitor the occurrence of fire on Covered Species in the DRECP Conservation Area as part of the MAMP. Permittees will be responsible for monitoring the effects of fire on their project sites.

Planned Response

If a fire occurs within non-fire adapted natural communities in the DRECP Conservation Area, the DRECP Coordination Group will review the cause of the fire; assess fire damage to Covered Species and their habitat; and evaluate the effectiveness of fire prevention, response, and recovery measures. After that review, the DRECP Coordination Group will develop and implement the following: (1) a monitoring program through the MAMP to document natural re-growth within the damage area for an appropriate period; (2) an action plan to improve habitat conditions if monitoring indicates natural re-growth is not occurring and Covered Species will be adversely affected due to the lack of natural re-growth; (3) an updated risk assessment; and (4) a long-term, species-specific or ecoregion-specific response through the adaptive management process outlined in the MAMP. Similarly, permittees will review the incidence of fire on their project sites and follow the same four-step process for planning a long-term response.

II.3.1.7.3.3 Non-Native Species

Invasive non-native plants are currently present within areas identified in the Interagency Plan-wide Conservation Priority Areas, and may include areas that will be acquired as permittee mitigation under the DRECP.

Risk Assessment

For the purpose of identifying changed circumstances that require a management response, invasion or proliferation of non-native species is defined as an occurrence of a new non-native species or increased proliferation of existing non-native species within the DRECP Conservation Area. Documentation of such occurrences will serve as a trigger for closely monitoring the abundance and distribution of non-native species and any adverse effects to Covered Species, and responding as appropriate to ensure authorized take levels for Covered Activities are not exceeded and that progress towards achieving BGOs is not compromised within the DRECP Conservation Area.

Monitoring and appropriate management of non-native species in the DRECP Conservation Area by the DRECP Coordination Group are generally described in the MAMP. Monitoring will identify existing non-native species in the DRECP Conservation Area so that expansion into previously unaffected habitats, and invasion of new non-native species, can be identified as these situations occur. In addition, during the first 5years of DRECP implementation (i.e., the first 5 years after a ROD for a Final DRECP and EIR/EIS is signed), USFWS and CDFW will work with the DRECP Coordination Group to identify Covered Species and habitats vulnerable to invasive non-native species, update the risk assessment, and create a long-term, species-specific or ecoregion-specific response.

Preventive Measures

Monitoring will enable the DRECP Coordination Group to assess the spread of invasive non-native species and their impacts on Covered Species within the DRECP Conservation Area, and the effectiveness of any control measures that are implemented. The MAMP's monitoring program increases the probability of early detection of new non-native species or proliferation of existing non-native species. Early detection will improve the chances of successfully reducing or controlling these threats and their adverse impacts on Covered Species, especially due to the unpredictable yet expected influence of climate change on the spread of invasive species.

Planned Response

The DRECP Coordination Group will assess adverse impacts to Covered Species and their habitats resulting from invasive species and develop and initiate the following: (1) control measures to address the threats to Covered Species, (2) an updated risk assessment, and (3) a long-term, species-specific or ecoregion-specific response through the adaptive management process outlined in the MAMP.

II.3.1.7.3.4 Changes to Hydrology and Groundwater Resources

Substantial impacts to hydrology and groundwater tables that could adversely affect Covered Species and their habitats on mitigation lands within the DRECP Conservation Area could result from flow diversions and groundwater withdrawals used to clean and maintain renewable energy facilities, or from disruption of existing flows and washes resulting from ground disturbance for construction. The effects of climate change and prolonged drought also are likely to affect hydrology and groundwater in the DRECP Conservation Area.

Risk Assessment

For the purpose of identifying changed circumstances requiring a management response, changes to hydrology would be impacts to natural flow regimes that adversely affect aquatic, wetland, and riparian Covered Species and their habitats within the DRECP Conservation Area. Changes in groundwater resources would be those resulting in lowered water table or aquifer levels where an increase in the depth to groundwater adversely affects water availability to Covered Species and their habitats. As discussed above, drought conditions persisting longer than 3 years will be considered conditions of prolonged drought, and will serve as a trigger for closely monitoring the effects of climatic drought on hydrology and groundwater, any adverse effects to Covered Species, and responding as appropriate to ensure authorized take levels for Covered Activities are not exceeded and that progress towards achieving BGOs is not compromised within the DRECP Conservation Area.

As described in the MAMP, the DRECP Coordination Group will monitor hydrologic and groundwater regimes that support Covered Species and their habitats in the DRECP Conservation Area. During the first 5 years of DRECP implementation (i.e., the first 5 years after a ROD for a Final DRECP and EIR/EIS is signed), USFWS and CDFW will work with the DRECP Coordination Group and permittees to identify species vulnerable to hydrologic and groundwater reductions, and areas where changes to these resources are likely to occur.

Preventive Measures

Due to the unpredictable yet expected influence of climate change on desert water resources, the DRECP Coordination Group will monitor the effects of drought, and baseline changes to hydrology and groundwater, on Covered Species in the DRECP Conservation Area as part of the MAMP. Monitoring will increase the chances of early detection of such changes, so that the DRECP Coordination Group can develop measures to counteract the adverse effect of those changes to Covered Species. As discussed in the MAMP, the DRECP Coordination Group will use appropriate methods and technology (which may change over time) to monitor hydrology and groundwater levels in the DRECP Conservation Area.

Planned Response

If monitoring detects a substantial change in hydrology or lowering of the water table or a decline in the status of Covered Species related to these situations, the DRECP Coordination Group will assess the adverse effects to Covered Species and take the following actions: (1) develop feasible measures to ameliorate the adverse effects to Covered Species and their habitats, (2) recommend actions to ameliorate the effects of the climatic drought on Covered Species, (3) update the risk assessment, and (4) create a long-term, species-

specific or ecoregion-specific response through the adaptive management process outlined in the MAMP.

II.3.1.7.3.5 Renewable Energy Technologies

The REAT agencies assume that renewable energy technology will continue to evolve and improve in efficiency for power generation in ways that cannot be predicted today. For the purpose of identifying changed circumstances that require a management response, a change in renewable energy technology would be a change to Covered Activities (e.g., design, construction, operations, and maintenance) that results in impacts to Covered Species that are not analyzed in the Draft DRECP and EIR/EIS. While some technological changes may reduce environmental impacts, other changes may involve new or different environmental impacts that would adversely affect Covered Species in ways that are not addressed in the DRECP. Because the particular infrastructure and impacts of new technologies are not foreseeable at this time, any new technologies that are not described and analyzed as Covered Activities in the Draft DRECP and EIR/EIS are not considered as changed circumstances that can be adequately addressed under adaptive management. Therefore, the DRECP does not provide an adaptive management strategy for implementing new technologies that adversely affect Covered Species. If a new technology would result in impacts to Covered Species that are not analyzed in the DRECP or EIR/EIS, an amendment to the DRECP would be required to cover the new technology under the NCCP and GCP.

It is reasonably foreseeable that new technologies or techniques will be developed that reduce the operational impacts of Covered Activities to ecosystems and wildlife. Implementation of such new technologies or techniques to avoid or minimize impacts to Covered Species would not result in increased levels of incidental take and thus are considered as appropriate changed circumstances under the DRECP. Examples of techniques to minimize impacts to wildlife include more effective bird diverter devices on transmission lines, remote sensing of nearby wildlife for predicting the need to curtail facility operations, and cost-effective ways to exclude birds and bats from evaporation ponds. Improved generation technologies also may be developed that would reduce operational impacts to birds, such as non-reflective solar panels or wind turbines with reduced rotor-swept areas and rotor speeds.

Risk Assessment

For the purpose of identifying changed circumstances requiring a management response, new techniques would be those documented in the scientific literature or industry reports as likely to effectively avoid or minimize operational impacts of Covered Activities to biological resources. The DRECP Coordination Group will keep informed of technological advances in renewable energy development world-wide. If

the DRECP Coordination Group determines that new measures documented would be likely to effectively reduce the risk of operational impacts to Covered Species, such measures may be added as CMAs for Covered Activities.

Preventive Measures

The USFWS and CDFW will also require permittees, to the extent feasible based on cost, to implement new techniques to reduce operational impacts to Covered Species. Permittees will monitor the effectiveness of the new techniques in reducing incidental take of Covered Species in annual reports to the USFWS, CDFW and DRECP Coordination Group. Permittees who wish to repower or reconfigure their existing facilities to take advantage of improved renewable energy infrastructure may submit a proposal to the DRECP Coordination Group for review as a modification to the DRECP (including the GCP and NCCP). The proposal must document how the new technology would reduce the level of incidental take of Covered Species, using reports from the scientific literature.

Planned Response

If permittee monitoring reports indicate the success of new avoidance and minimization measures for DRECP Covered Activities, the USFWS and CDFW will require the new measures as terms and conditions of any new permits issued under the GCP and NCCP. Additionally, the DRECP Coordination Group will (1) continue to monitor the new preventive measures, and other new measures documented in the scientific literature; (2) update the risk assessment; and (3) create a long-term, species-specific or ecoregion-specific response for requiring implementation of new measures through the adaptive management process outlined in the MAMP.

II.3.1.7.3.6 Population Declines of Covered Species

Populations of Covered Species may decline for reasons unrelated to implementation of permits issued under the GCP and NCCP, to the extent that no additional mortality sources can be sustained and we would need to reduce or cease new authorizations of incidental take. General causes for population declines of desert species unrelated to renewable energy development include, but are not limited to, loss of individuals and/or habitat due to other types of land use and development, disease and toxicity responses, population dynamics effects due to small population size, and inability to adapt to climate change. Examples of potential causes for substantial population declines include the spread of lethal diseases such as upper respiratory disease in desert tortoise; a substantial and prolonged population decline of California condors due to lead poisoning; reduced irrigation of agricultural lands that results in less available habitat for Covered Species; and species declines of bird populations or desert pupfish in the Imperial Valley due to receding water levels in the Salton Sea.

This process for addressing population declines of Covered Species does not apply to golden eagles that are included as Covered Species under the DRECP and permits issued under the GCP and NCCP. An adaptive management process for monitoring take of golden eagles and reassessing take levels every 5 years is outlined in the golden eagle CMAs and further described under the process for adaptive management associated with requirements of the Eagle Act in Appendix H.2.9. For permits that include golden eagles as a Covered Species, permittees must agree to implement the terms and conditions of the adaptive management process outlined for golden eagles in the CMAs and Appendix H.2.9.

Risk Assessment

For the purpose of identifying changed circumstances requiring a management response, population declines unrelated to Covered Activities would be changes in numbers, distribution, or reproduction of Covered Species that, in conjunction with levels of authorized incidental take, would adversely affect the conservation of Covered Species within the DRECP Conservation Area to the extent of precluding adequate compensation for incidental take, or that would preclude issuance of further incidental take permits for affected Covered Species. During the first 5 years of DRECP implementation (i.e., the first 5 years after a ROD for a Final DRECP and EIR/EIS is signed), USFWS and CDFW will work with the DRECP Coordination Group to identify species vulnerable to population declines and particular priority conservation areas where population status can be monitored by focused surveys. In addition, USFWS and CDFW will work with the DRECP Coordination Group to stay mutually informed of the status of each Covered Species throughout its range. If it is determined that a population decline of a Covered Species is occurring, for example from MAMP monitoring reports or from reports documented in the scientific literature, that will identify the trigger for closely monitoring the status of Covered Species within the DRECP Conservation Area and the level of operational impacts to Covered Species on permittee project sites. Monitoring will allow the DRECP Coordination Group and permittees to respond as appropriate to ensure authorized take levels for Covered Activities are not exceeded and that progress towards achieving BGOs is not compromised within the DRECP Conservation Area.

Preventive Measures

The DRECP Coordination Group will keep informed on the status of each Covered Species throughout its range and within the DRECP Conservation Area, and will conduct more focused monitoring as feasible for declining species. Monitoring will enable the DRECP Coordination Group to increase the chances of early detection of such declines, and design and implement appropriate preventive measures.

Planned Response

As discussed in the MAMP, the DRECP Coordination Group will use appropriate methods to monitor Covered Species in the DRECP Conservation Area. Permittees will monitor incidental take on their project sites. If monitoring detects a substantial decline in numbers, distribution, or reproduction of Covered Species, or a level of incidental take that approaches, equals, or exceeds authorized take levels, the DRECP Coordination Group will take the following actions: (1) recommend and implement research to determine if Covered Species are declining in the Plan Area, such as contracting expert scientists to develop population viability analyses; (2) research and develop feasible measures to ameliorate the effects of population declines on Covered Species and their habitats so that authorized take levels are not exceeded; (3) update the risk assessment; and (4) create a long-term, species-specific or ecoregion-specific response through the adaptive management process outlined in the MAMP. If substantial declines continue, it may be necessary to cease issuing any new permits under the GCP and NCCP.

II.3.1.7.3.7 New Listings of Species Not Covered by the DRECP

New Listings of Species Under ESA Not Covered by the GCP and Designation or Revision of Critical Habitat for a Covered or Non-Covered Species

Table II.3-2 lists the Covered Species addressed by the DRECP and GCP. The USFWS may list additional species under the federal ESA that are not covered by the GCP. If a non-listed species that is not covered by the GCP is adversely affected by GCP Covered Activities, and such species are listed under the ESA during the term of the GCP (i.e., through 2040), we would consider this to be a Changed Circumstance.

Critical habitat has been designated for some of the federally listed species covered by this GCP. If in the future, critical habitat that is currently designated for a Covered Species is revised, or critical habitat is newly designated for a Covered Species, and such designated or revised critical habitat may be affected by one or more Covered Activities, or if critical habitat is designated or revised for a Non-Covered Species and such designated or revised critical habitat may be affected by one or more Covered Activities, such revision or designation of critical habitat would constitute a Changed Circumstance.

Risk Assessment

If new species listings or new designations or revisions of critical habitat occur, USFWS in consultation with the permittees will reevaluate the GCP and incidental take permits issued under the GCP, and the GCP Covered Activities will be modified, as necessary, to ensure that any activities covered under the GCP and permits are not likely to result in take of or

jeopardy to the newly listed Non-Covered Species, or the destruction or adverse modification of the newly designated or revised critical habitat.

Preventive Measures

Permittees under the GCP would implement the modifications to the GCP Covered Activities identified by the USFWS as necessary to avoid the likelihood of take of or jeopardy to the newly listed Non-Covered Species, or the destruction or adverse modification of the newly designated or revised critical habitat. Permittees would continue to implement such modifications until such time as permittees have applied for and the USFWS has approved an amendment of the permit, in accordance with applicable statutory and regulatory requirements, to cover the newly listed Non-Covered Species or address the newly designated or revised critical habitat or until the USFWS notifies the permittees in writing that the modifications to the GCP Covered Activities are no longer required to avoid the likelihood of take of or jeopardy to the newly listed Non-Covered Species, or the destruction or adverse modification of the newly designated or revised critical habitat.

Planned Response

Avoidance measures designed to ensure that Covered Activities are not likely to result in take of or jeopardy to newly listed, Non-Covered Species, or the destruction or adverse modification of the newly designated or revised critical habitat, will include the following: (1) evaluation of Covered Activities with respect to potential effects on the newly listed species or newly designated or revised critical habitat, including assessment of suitable habitat for the newly listed species within the areas potentially affected by the proposed Covered Activities, and surveys for the newly listed species, as appropriate, using accepted protocols; (2) evaluation of Covered Activities and whether the affected newly designated or revised critical habitat would remain functional to serve its intended conservation value for the species; and (3) implementation of measures to avoid impacts to the newly listed species or newly designated or revised critical habitat based on the results of the data collected in (1) and (2) above and the evaluation of those data in the context of the design of the Covered Activities. Notwithstanding the foregoing, the incidental take permits issued under the GCP may be suspended or revoked if continuation of the permits would result in take of or jeopardy to the newly listed Non-Covered Species, or the destruction or adverse modification of the newly designated or revised critical habitat.

New Listing of Species Under CESA Not Covered Under the DRECP NCCP

Nature of Changed Circumstance

The California Fish and Game Commission (CFGC) may list additional species that occur in the Plan Area as threatened or endangered under CESA. In the event CFGC lists a species

that occurs within the Plan Area but is not covered by the DRECP, the provisions of this changed circumstance will be triggered. A new species listing of a Covered Species will not trigger this changed circumstance because the DRECP already anticipates such actions by providing for the conservation of each Covered Species. For that reason, take coverage for a newly listed Covered Species will be automatic and will not require any amendment or modification of the DRECP, the implementation agreement, or the Section 2835 permit.

Planned Responses

Upon a new CESA listing of a species not covered by the DRECP, the Coordination Group will undertake the measures described above for new listings under ESA except the provisions regarding critical habitat will not apply.

If CFGC lists a species that is not a Covered Species as threatened or endangered or designates the species as a candidate species, the Coordination Group may request that CDFW add the species to the relevant take authorizations issued pursuant to the DRECP. In determining whether to seek take coverage for the species, the Coordination Group will consider, among other things, whether the species is present in the Plan Area, whether Covered Activities could result in incidental take of the species, and whether existing conservation measures benefit the species and avoid and minimize effects of Covered Activities on the species.

II.3.1.8 Cost and Funding

This section estimates costs of, and identifies potential funding sources for, implementing the DRECP biological and conservation and mitigation program for Covered Species under the GCP and the NCCP. The purpose of the cost and funding analysis in the section is to meet requirements in the ESA and the NCCPA regarding assurances of adequate funding for implementation of HCPs and NCCPs.

This section does not include a discussion of the cost and funding for the implementation of mitigation for resources other than biological resources or for activities other than Covered Activities. These other costs could include costs associated with the requirements imposed during the licensing and environmental review process, costs for nonbiological mitigation (e.g., cultural resources, recreational resources, visual resources, and wilderness characteristics), and costs for decommissioning and closure. These costs would be addressed separately on a project-by-project basis through the BLM right-of-way process, CEC licensing process, and CSLC leasing process, and other yet-to-be identified processes such as a county permitting process, as applicable.

Unlike some multispecies habitat conservation plans, the DRECP will not be funded through a set of standard fixed fees on a per-acre or other unit basis. Instead, costs will be

recovered through mitigation fees determined and collected on a project-by-project basis. It was determined that the range of potential mitigation actions varied too widely by both Covered Activities and geography to set an appropriate fee schedule. The costs estimates projected here are intended to guide policymakers and to provide stakeholders and potential applicants with a reasonable estimate of project-related costs. The costs and fees for any one individual project or covered activity will likely differ from any specific values presented here. The structure and elements of the implementation fee is discussed further below in the funding section.

II.3.1.8.1 Cost to Implement the GCP and NCCP Biological Conservation and Mitigation Program

Scope and Purpose of the Cost Analysis

The actions discussed in this Plan address the requirements of the GCP and NCCP and are not limited to compensatory mitigation. The NCCP is designed to achieve the DRECP NCCP BGOs; compensatory mitigation is the primary way in which the DRECP NCCP BGOs will be achieved, but not the only way. However the requirements for compensatory mitigation drive much of the scope of the GCP and NCCP, which are DRECP's.

To be covered under the DRECP, project proponents of Covered Activities will be required to pay the cost of implementing applicable CMAs, which include actions that provide compensatory mitigation. In most cases, compensatory mitigation will include the conservation of land containing habitat for Covered Species. Natural communities and other habitat that support Covered Species are conserved to offset impacts to Covered Species. Compensatory mitigation for impacts to Covered Species will also include a number of other conservation actions, such as habitat restoration, land management actions, removal of threats or causes of mortality for Covered Species, and other actions and measures more fully described in Section II.3.1.2.5.7.

This analysis uses two sets of actions as a surrogate for all forms of compensatory mitigation—land acquisition and a selection of habitat restoration actions.

The conservation of land for compensatory mitigation may be accomplished in variety of ways.

- If land is bought *in fee simple*, it can be protected and managed for Covered Species; proponents of Covered Activities may purchase properties and transfer them to the CDFW or another governmental entity, special district, or non-profit organization

qualified to hold and manage property for the benefit of Covered Species pursuant to California Government Code Sections 65965–65968.[6]

- If land is protected through the purchase of *conservation easements* that protect the conservation values of the land in perpetuity,[7] land uses that are incompatible with the conservation of Covered Species can be prohibited. Conservation easements may be held by CDFW or another governmental entity, special district, or non-profit organization qualified to hold conservation easements pursuant to California Government Code Sections 65965–65968.

For the purposes of the analysis presented here, the assumption is that 85% of the acreage is acquired in fee simple and 15% through easements; actual acquisition patterns could vary substantially, both in total and over time. The predominant reliance on fee simple acquisition is made because land acquisition costs can be estimated more accurately and reliably than other kinds of conservation actions. The assumption does not limit or reflect a disagreement with the intent to use a variety of actions for compensatory mitigation purposes and to achieve Step-Down Biological Objectives.

The non-acquisition actions included in this analysis are related to habitat restoration and protection. The analysis focuses on four types of actions that are expected to be the predominant methods at this time, but by no means do these represent the entire universe of such actions. Those types include:

- Habitat enhancement,
- Fencing and signage,
- Roost habitat creation, enhancement, and protection,
- Predator, cowbird, or starling control

The assumptions for these analyses are discussed further in Appendix I.

---

6 Such lands may be obtained in a number of ways outside of direct cash transactions, but these will among willing sellers and willing buyers.

7 A conservation easement is a partial interest in land that can be transferred to a qualified land conservancy or government entity. The purpose is to conserve or protect the land. Conservation easements typically restrict allowable uses of the land by prohibiting development and sometimes restricting or requiring particular management activities. A conservation easement is legally binding in perpetuity.

Scope of Mitigation Opportunities

Mitigation on Privately Owned Lands

For purposes of this cost analysis, the cost estimate assumes a mix of compensatory mitigation will be in the form of land acquisition, all on privately held lands, and that the remaining compensation will be in the form of non-acquisition actions on both privately and publicly held land. Table II.3-34 shows the mix by county.

Table II.3-34
Proportion of Acquisition and Non-Acquisition Compensation

County	Acquisition	Non-Acquisition
Imperial	81.2%	18.8%
Inyo	67.6%	32.4%
Kern	80.2%	19.8%
Los Angeles	80.2%	19.8%
Riverside	62.1%	37.9%
San Bernardino	68.8%	31.2%
San Diego	85.0%	15.0%
Total	73.7%	26.3%

Mitigation on Publicly Owned Lands

This analysis assumes that mitigation on publicly owned lands will be limited to non-acquisition habitat restoration and protection activities. Those measures will be implemented on federal, state or local government property when biologically appropriate for meeting Step-Down Biological Objectives. The cost analysis makes no specific assumption about the proportion of non-acquisition mitigation that will occur on public versus private lands because the analysis does not assume that costs differ by land ownership.

However, in actual implementation certain lands held by local and state government agencies may be acquired. For example, agricultural lands retired by the Imperial Irrigation District to comply with conservation measures to provide for water transfers to Metropolitan Water District of Southern California and San Diego County Water Authority may be available for acquisition in the future. Federal public lands are unlikely to be considered for acquisition.

II.3.1.8.2 Cost Estimate Methodology

This section provides estimates for the overall cost of purchasing, restoring and managing lands to fulfill compensatory mitigation requirements for impacts to Covered Species from Covered Activities under each of the six alternatives. A discussion about options for funding this activity follows. More detail is contained in Appendix I.

Description of the Cost Estimation Model and Scenario Analysis

The DRECP Mitigation Cost Model computes the total estimated cost for all mitigation projects on private and public residential, agricultural and open space lands in Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, and San Diego Counties.

The cost estimation model can identify acreage acquisition and management costs within each county segmented by land use. The model estimates potential costs for a selected Alternative using a set of assumptions and parameters about the cost categories, generation build-out, acreage to be acquired or managed for mitigation, and variations in economic and financial parameters. The cost data and assumptions in the cost categories are detailed in Appendix I.

Nearly all of the model inputs can be altered by analyst inputs and selections. This allows the analyst to generate costs for a variety of scenarios. Using the project parcel and acre counts, the model computes per parcel and per acre costs for each of the projects and for the total combined projects. The *mid-level cost scenario* uses the combined project costs, and, with the exception of escrow/closing costs, the *high* and *low scenarios* use the maximum and minimum individual project costs, respectively. The various scenario assumptions are discussed in more detail in the following sections.

Program administrative costs are also included. The assumptions for those costs are detailed in Appendix I.

II.3.1.8.3 Cost Evaluation Assumptions and Forecasts

The cost model is driven by specific forecasts and assumptions drawn from the environmental planning and analysis developed for the NCCP and GCP. Forecasts and assumptions about economic and financial conditions also affect the analysis. Appendix I describes the methods and data used to develop these forecasts and assumptions.

II.3.1.8.3.1 Number and Timing of Projects

Scenarios have been developed for the implementation of compensatory mitigation acquisitions over time. The location and timing of Covered Activities will ultimately drive when land will need to be purchased. The timing of the purchase of lands for compensatory

mitigation will affect the total discounted cost over the planning period to 2040 or "net present value" (NPV)[8] cost of the overall NCCP and GCP. The time value of money affects overall implementation costs. This in turn will affect the funding requirements. If land is purchased far in the future, implementation fee revenues and other funds collected now can earn interest to help fund those purchases. The forecast scenarios used are described in Appendix I.

Land Potentially Available for Covered Species Mitigation

The model assumes a finite number of private lands are potentially available for mitigation in the Plan Area. The DRECP estimates the total amount of private land potentially available for purchase for compensatory mitigation within Biological Conservation Planning Areas for each alternative. Land appropriate for purchase includes all acres within Biological Conservation Planning Areas and private in-holdings within BLM LUPA Conservation Land Designations. This analysis assumes that lands will be purchased for compensatory mitigation in Biological Conservation *Priority* Areas within the county where the Covered Activity impacts occur. If private lands are not available within such Biological Conservation *Priority* Areas, the analysis assumes lands would be purchased from the remaining Biological Conservation *Planning* Areas within that county. If no more private land is available within the county, the analysis assumes that lands would be purchased within Biological Conservation *Priority* Areas in other counties. Costs are provided by county, rather than by ecoregion subarea, because land cost information varies from county to county, and land costs are different from county to county. Appendix I shows a breakdown of available acreage for each alternative.

Planning and monitoring are the responsibility of the Coordination Group will also need to be funded. Detailed descriptions of these plans/monitoring requirements are included in the MAMP and CMAs, Sections II.3.1.3 and II.3.1.2.5. The basis for developing costs of planning and monitoring requirements are included Appendix I. Specific planning and monitoring costs are not included in this analysis because of a lack of sufficient data and projections to compile an accurate estimate.

[8] " (T)he net present value (NPV)... of a time series of cash flows, both incoming and outgoing, is defined as the sum of the present values (PVs) of the individual cash flows. In the case when all future cash flows are incoming ...and the only outflow of cash is the purchase price, the NPV is simply the [discounted] PV of future cash flows minus the purchase price (which is its own PV). NPV is a central tool in discounted cash flow (DCF) analysis, and is a standard method for using the time value of money to appraise long-term projects. Used for capital budgeting, and widely throughout economics, finance, and accounting, it measures the excess or shortfall of cash flows, in present value terms, once financing charges are met." (http://www.princeton.edu/~achaney/tmve/wiki100k/docs/Net_present_value.html)

II.3.1.8.4 Summary of Estimated Costs

II.3.1.8.4.1 Cost Estimate for Acquiring Compensation Lands the Preferred Alternative

The total costs for acquiring and managing lands for the DRECP over the planning period to 2040 is shown in Table II.3-35. The mid-case acquisition cost estimate is $0.76 billion. The estimate in the low cost scenario is $0.31 billion, and $1.7 billion in the high cost scenario. In the all three cost scenarios, land is acquired on a least-cost first basis.

Table II.3-35
NPV of Mitigation Acquisition Cost Estimates Using Preferred Alternative Acreage ($ Millions)

County	Total Estimated Cost—All Land Types		
	Low	*Mid*	*High*
Imperial	$91.1	$222.7	$496.2
Inyo	$5.6	$12.9	$26.9
Kern	$32.4	$74.0	$157.6
Los Angeles	$20.3	$76.3	$151.5
Riverside	$44.8	$102.1	$217.8
San Bernardino	$80.6	$203.3	$470.1
San Diego	$30.3	$70.3	$181.2
Total	**$305.2**	**$761.5**	**$1,701.3**

Table II.3-36 shows the forecasted cost per acquired acre for purchasing and managing mitigation land at five-year snapshots. In other words, this is the amount that a project developer would need to fund to acquire an acre of private land for purposes of compensatory mitigation for Covered Species, based on mid-case assumptions.

Table II.3-36
Five-Year Snapshots for Per Acre Acquisition and Management Costs

Preferred Alternative - Mid-Cost Case, Least-Cost First					
County	*2017*	*2022*	*2027*	*2032*	*2037*
Imperial	$3,500	$4,000	$4,500	$5,100	$5,700
Inyo	$3,800	$4,300	$4,900	$5,500	$6,200
Kern	$3,700	$4,200	$4,700	$5,300	$6,000
Los Angeles	$3,700	$4,200	$4,700	$5,300	$6,000
Riverside	$3,700	$4,200	$4,700	$5,300	$6,000
San Bernardino	$3,900	$4,400	$5,000	$5,700	$6,400
San Diego	$3,700	$4,200	$4,700	$5,400	$6,100

Table II.3-37 shows the portion of costs associated with habitat mitigation through the acquisition and management of compensation land in the mid case with the Preferred Alternative using the least-cost first acquisition strategy. These cost categories are described in detail in Appendix I.

Table II.3-37
Open Space—NPV of Mitigation Acquisition Cost Estimates in Mid-Case Using Preferred Alternative Acreage and Lowest Cost First Compensation Acreage Selection Criteria ($ Millions)

County	Acquisition and Initial Site Work	Long-Term Management and Maintenance	National Fish and Wildlife Foundation Fees	Property Taxes	Total Estimated Cost	Total NPV Cost per Acre
Imperial	$117.6	$96.5	$4.4	$4.3	$222.7	$4,800
Inyo	$7.3	$5.1	$0.3	$0.3	$12.9	$5,300
Kern	$40.3	$30.4	$1.5	$1.8	$74.0	$5,100
Los Angeles	$57.0	$12.4	$1.6	$5.3	$76.3	$13,000
Riverside	$55.6	$42.0	$2.0	$2.5	$102.1	$5,100
San Bernardino	$115.0	$78.3	$4.1	$5.8	$203.3	$5,400
San Diego	$0.0	$0.0	$0.0	$0.0	$0.0	$0
Total	**$448.5**	**$272.0**	**$15.4**	**$25.7**	**$761.5**	**$5,900**

II.3.1.8.4.2 Cost Estimate for Non-Acquisition Compensation in the Preferred Alternative

The Draft Assumptions for the DRECP Cost Analysis provide acreage of acquisition and the acreage-equivalent activities for non-acquisition compensation for each ecoregion subarea. The draft distinguishes between compensation for impacts in non-agricultural lands and terrestrial operational impacts in wind project areas and compensation for impacts in agricultural lands. We summed the two to compute the total acreage and its equivalent of lands needed for both acquisition and non-acquisition forms of compensatory mitigation for each ecoregion subarea and then mapped the subareas to the DRECP counties to determine acquisition and non-acquisition compensation acreage values by county.

As described above, for purposes of this analysis, non-acquisition measures are assumed to provide a proportion of the total required compensatory mitigation for purposes of estimating NCCP and GCP implementation costs. Four non-acquisition measures were considered for this analysis: habitat enhancement; fencing and signage; roost habitat creation, enhancement, and protection; and predator, cowbird or starling control. The

estimated acreage-equivalents of lands needed for non-acquisition forms of compensatory mitigation represent "acquisition-calibrated" mitigation compensation and were developed using "acquisition-calibrated" mitigation ratios that represent the number of acres of conserved that are equivalent to a unit of each non-acquisition compensatory mitigation action. We converted the acquisition-calibrated non-acquisition compensatory mitigation acreages to equivalent non-acquisition mitigation units using the compensation ratio assumptions discussed in Appendix I.

We applied these cost estimates to the non-acquisition mitigation units to determine the non-acquisition mitigation costs for each county. Table II.3-38 shows the costs associated with non-acquisition mitigation. Total non-acquisition mitigation costs are over $0.91 billion in the mid-case.

Table II.3-38
NPV of Non-Acquisition Mitigation Cost Estimates ($ Millions)

County	Total Estimated Cost
Imperial	$210.2
Inyo	$22.8
Kern	$69.7
Los Angeles	$28.8
Riverside	$240.1
San Bernardino	$324.3
San Diego	$17.1
Total	**$913.0**

II.3.1.8.4.3 Cost Summary for the Preferred Alternative

Table II.3-39 shows the range of estimated costs by county for all acquisition and non-acquisition activities related to meeting the Biological Objectives. Forecasted costs range from $1.2 to $2.6 billion over the 25 year period from 2016 to 2040.

Table II.3-39
Range of Total Estimated NPV Cost for Biological Compensation in the Preferred Alternative ($ Millions)

County	Low	Mid	High
Imperial	$301.4	$433.0	$706.4
Inyo	$28.4	$35.7	$49.7
Kern	$102.1	$143.7	$227.3
Los Angeles	$49.1	$105.1	$180.3
Riverside	$284.8	$342.2	$457.9
San Bernardino	$404.9	$527.5	$794.4
San Diego	$47.5	$87.4	$198.3
Total	$1,218.2	$1,674.5	$2,614.3

Cost Summary per Acre Impacted

Table II.3-40 summarizes the NPV of the total estimated cost per acre of impact for Covered Activities, i.e., the acreage of project footprint. The estimated impact acreage is provided in Table H-8 in Appendix H. Appendix H also discusses the method used to convert impact acreage into estimated compensation acreage-equivalents. Based on this data, DRECP-wide average costs range from $5,600 to $12,000 per acre of impact. The higher costs in some counties are associated with greater reliance on non-acquisition compensation activities on public lands. Also, the county-specific costs are affected by the assignment of costs to projects across counties. Where ecoregions cross county borders, these assignments are based on a simple proportional formulation that may not accurately represent actual cost responsibilities.

Table II.3-40
Total Estimated NPV Cost per Acre Impacted

County	Low	Mid	High
Imperial	$4,240	$6,100	$9,950
Inyo	$5,690	$7,140	$9,930
Kern	$3,290	$4,630	$7,330
Los Angeles	$4,910	$10,500	$18,010
Riverside	$5,090	$6,110	$8,180
San Bernardino	$9,200	$11,990	$18,050
San Diego	$0	$0	$0
Total	$5,610	$7,720	$12,050

II.3.1.8.4.4 Cost Comparison of the Action Alternatives

Table II.3-41 summarizes the total costs for the preferred and other four action alternatives under consideration. Alternatives 1, 3 and 4 have a lower forecasted cost than the Preferred Alternative with mid-case assumptions. Alternative 1 is lowest at $1.35 billion; Alternative 2 is the most expensive at $3.05 billion. As described in Volume II, Chapters II.3 through II.7, each DRECP alternative has a specific combination of DFAs and DRECP Plan-Wide Reserve Design Envelope. As the size and location of the DFAs vary in each of the alternatives, so do the specific CMAs that are required to offset the development impacts within the DFAs. The implementation of the specific set of CMAs for impact compensation identified in each alternative determines the compensation cost. The table below shows how the estimated compensation costs vary by alternative and by county. For details about what CMAs could be implemented by alternative see Section II.3.1.2.5.

Table II.3-41
NPV of Mitigation Cost Estimates for the Action Alternatives Using Mid Case Lowest Cost First Compensation Acreage Selection Criteria ($ Millions)

Total Estimated Cost—All Land Types					
County	*Alternative 1*	*Alternative 2*	*Alternative 3*	*Alternative 4*	*Preferred*
Imperial	$444.0	$578.6	$444.6	$377.0	$433.0
Inyo	$65.7	$140.5	$49.9	$48.7	$35.7
Kern	$103.3	$343.8	$137.7	$139.5	$143.7
Los Angeles	$56.1	$325.9	$95.4	$101.1	$105.1
Riverside	$197.3	$440.0	$217.5	$414.5	$342.2
San Bernardino	$397.7	$1,130.3	$465.3	$479.0	$527.5
San Diego	$89.7	$95.0	$89.7	$83.5	$87.4
Total	**$1,353.8**	**$3,054.1**	**$1,500.0**	**$1,643.3**	**$1,674.5**

II.3.1.8.5 Funding Sources

This section summarizes current funding options, and analyzes alternative funding methods including fees, grants and subsidies.

This section identifies the potential sources that may be available to support the funding of the implementation actions identified in the previous sections. Consistent with the goals of the NCCPA and ESA, the NCCP and GCP have been designed to mitigate for the effects of the Covered Activities that are permitted under this Plan, contribute to the recovery of threatened and endangered species, help prevent species from becoming threatened or endangered, and improve ecosystem health. To achieve these important goals, the NCCP

will be funded by implementation fees determined by the level of incidental take anticipated to result from Covered Activities permitted under the NCCP and other sources of private and public funding. The GCP will be funded through implementation fees (referred to as mitigation fees in the GCP appendix [Appendix M]).

It is important to note that this chapter is not a financing plan for the state or federal agencies or any other party. Separate financing plans, funding agreements, legislative authority, and other documents will be needed to enable the use of certain funding sources. This chapter provides an overview of potential funding sources that are likely to be available to support the implementation of the DRECP.

II.3.1.8.5.1 DRECP Implementation Fees

An implementation fee will be required for all Covered Activities. Revenues from implementation fees will be used to fund implementation of CMAs that provide compensatory mitigation for the impacts of the Covered Activities and provide for the conservation and management of Covered Species. The Coordination Group will determine the appropriate implementation fee amount for each Covered Activity based on the cost of implementing the DRECP CMAs required for the Covered Activity, taking into consideration the estimated costs for implementation discussed above and in Appendix I, and any other relevant and reliable cost information available at the time the implementation fee is determined. A description of the amount of the implementation fee, and the calculation used to determine the fee, will be provided to the proponent of the Covered Activity before the Approval Agency takes final action on the application for the Covered Activity. Payment of the implementation fee will be a condition of approval for each Covered Activity.

For Covered Activities that receive a take authorization issued under the NCCP, or a FESA incidental take permit issued under the GCP, the amount of the implementation fee will be included in and covered by the regulatory assurances provided in connection with the take authorization or incidental take permit, such that the amount of the fee will not be increased once the take authorization or incidental take permit is issued.

Proponents of Covered Activities will be directly responsible for implementing all CMAs that must be implemented on the site of a Covered Activity, including but not limited to CMAs intended to avoid or minimize the impacts of Covered Activities. The cost of implementing on-site CMAs will therefore not be included in the DRECP implementation fee.

Where the proponent of the Covered Activity elects to participate in the voluntary informal review of Project Proposals described in Section II.3.1.5.3, the Coordination Group will provide a preliminary estimate of the amount of the DRECP implementation fee that would apply to the proposed Covered Activity.

Components of DRECP Implementation Fees

The DRECP implementation fee for each Covered Activity will reflect the actual cost of implementing all off-site CMAs required for the Covered Activity. Table II.3-40 provides a range of estimated per-acre compensatory mitigation costs for Covered Activities. However, it is important to note that the estimate in Table II.3-40, like other estimates in the cost and funding analysis, are based on currently available information and are based on a general, Plan-wide cost estimate. Actual costs for off-site CMAs for individual Covered Activities are likely to vary from project to project, depending on location and other factors. Therefore, the DRECP implementation fee for each individual Activity, including the per acre cost reflected in the fee, is also likely to vary.

The DRECP implementation fee calculated for each Covered Activity will include the cost of the following, as applicable:

- Land acquisition (fee title or conservation easement), including
  - Level 1 environmental site assessment
  - Appraisal
  - Initial site work and clean-up
  - Fencing and signage
  - Transaction, overhead, closing and escrow costs
  - Boundary survey and monumentation
  - Biological survey for determining mitigation value of land
  - Third-party administrative costs
  - Coordination Group costs to review and determine suitability of land for mitigation purposes
- Endowment for long-term land management and maintenance
- Habitat restoration and enhancement, including
  - Exclusion of unauthorized activities (e.g., OHV vehicles or grazing)
  - Invasive species removal
  - Reseeding/replanting native vegetation
  - Reintroducing native wildlife
  - Restoring natural contours
  - Restoring lost or degraded hydrologic or geomorphic functions

  - Removing obstructions to the wind sand transport corridor
  - Increasing groundwater availability for dependent species
  - Roost habitat creation, enhancement, and protection,
  - Predator, cowbird, or starling control
  - Raven control and management
- Monitoring and adaptive management costs, including
  - Landscape and ecological processes effectiveness monitoring
  - Natural community effectiveness monitoring
  - Covered Species effectiveness monitoring
  - Desert tortoise range-wide population monitoring
  - Mohave ground squirrel data gap baseline studies
  - Bird and bat Covered Species Plan-wide monitoring of operation effects
  - Agriculture-dependent Covered Species monitoring
  - Golden eagle population monitoring
- Administrative costs, including
  - DRECP Agency staff and related costs
  - Office space and utilities
  - General office equipment
  - Staff-assigned office equipment
  - GIS hardware and software
  - Public outreach
  - Environmental review if necessary
  - Vehicle and related costs
  - Legal, accounting, and insurance costs

II.3.1.8.5.2 State and Federal Funding

Federal Funding Sources

U.S. Fish and Wildlife Service Administered Programs and Funds

USFWS has two funding sources relevant to the DRECP, the Cooperative Endangered Species Conservation Fund (Section 6 of the ESA), and the Land and Water Conservation

Fund. However, the DRECP will be competing with existing regional HCPs at the state level, and with local counties and other municipalities for these funds.

Cooperative Endangered Species Conservation Fund – HCP Land Acquisition Grants

The USFWS Cooperative Endangered Species Conservation Fund HCP Land Acquisition Grants authorized under Section 6 of the ESA are likely to provide a source of grant funding for land acquisition to complement mitigation lands that are acquired under the NCCP and GCP to contribute to recovery of Covered Species. The fund provides funding to states for land acquisition from willing sellers. States must contribute a minimum nonfederal match of 25% for the estimated program costs of approved projects.

Section 6 grants cannot be used for mitigation, but they may be used to acquire conservation lands that complement HCP (and GCP) mitigation lands. USFWS has provided significant funds to the State of California in the past to complement regional HCPs. In California, grants are applied for and administered by CDFW.[9]

The Land and Water Conservation Fund

The Land and Water Conservation Fund was established by Congress in 1965 to receive a portion of receipts from offshore oil and gas leases. These receipts are placed into a fund annually for state and local conservation, as well as for the protection of national treasures (parks, forest, and wildlife areas). The fund has been the principal funding source for federal land acquisitions for conservation and recreation purposes since 1965. BLM, USFWS, the National Park Service, and the U.S. Forest Service all receive funds from the Land and Water Conservation Fund. The fund also serves as a major source of state and local funding for land acquisition and development of public outdoor recreation resources through a state matching grant program. Funding for the program has remained flat since at least 2002. In fiscal year 2011, the fund was allocated $301 million for land acquisition nationwide. Allocations nationwide in past years have been as low as $138 million (fiscal year 2007) and as high as $536 million (fiscal year 2001).

The State Wildlife Grant Program is funded annually with an appropriation from Congress through the Land and Water Conservation Fund. The goal of the grant program is to conserve wildlife and their habitats. Grants are available to states and territories and are intended for developing and implementing programs that benefit fish and wildlife species at risk and their habitats. The grant program provides states with funds to address the conservation needs of nongame species, including reptiles, amphibians, and invertebrates. Priority is placed on projects that benefit species of greatest conservation concern. Grant

[9] See USFWS: http://www.fws.gov/midwest/endangered/grants/S6_grants.html and http://www.fws.gov/endangered/grants/grant-programs.html.

funds must be used to address conservation needs, such as research, surveys, species and habitat management, and monitoring, identified within a state's comprehensive wildlife conservation plan or strategy.

The State Wildlife Grant Program of the Land and Water Conservation Fund may fund land acquisition. Over the history of the fund, Western states have received the majority of the funding because federal land is much more common in the West. California has received an average of approximately $50 million annually over the 45-year life of the fund, although less in recent years due to declining funding allocations. The DRECP is expected to be competitive for this funding.

Federal Loan Guarantees for Multiple Species Habitat Conservation Plans

Representative Ken Calvert and Senator Dianne Feinstein have introduced the Infrastructure Facilitation and Habitat Conservation Act in Congress.[10] "The Infrastructure Facilitation and Habitat Conservation Act establishes a program to provide loans and loan guarantees to enable eligible public entities to acquire assets associated with habitat conservation plans (HCPs) approved by the Secretary of the Interior." This would create federal loan guarantees for agencies that buy land for habitat conservation as long as the plans support transportation and infrastructure efforts. The proposed program would operate in the U.S. Treasury, with input from the U.S. Departments of Interior and Commerce. The Secretary of the Treasury is tasked with soliciting loan applications for HCPs once every calendar year.

The bill does not specify a dollar amount to be appropriated for this loan program, which has a 10-year sunset clause. If signed into law, this loan guarantee program could provide the DRECP with loans early in the permit term that would facilitate land acquisition from willing sellers for the reserve system and when necessary to enable restoration efforts until funding sources were available later in the permit term. Loan guarantees do not provide new funding but rather only lower the interest rate on those loans, so the funding plan herein does not assume the loan guarantee program is a potential funding source.

State Funding Sources

State Tax Credit for Donation of Conservation Lands

The Natural Heritage Preservation Tax Credit Act of 2000 (Public Resources Code 37000 et seq.) protects wildlife habitat, parks and open space, archaeological resources, and agricultural land and water by providing state tax credits for donations of qualified land in fee title or conservation easement. The program has been extended twice. The current

[10] See https://beta.congress.gov/bill/113th-congress/house-bill/2280.

authorization extends until June 30, 2015. To date, $48 million in tax credits have been approved under the program.

The DRECP could benefit from this program, if extended further, by cost-sharing land acquisition with the federal government. Future bonds would provide funding for the state portion of the tax credit. Eligible donors would also be able to deduct the full value of land as a tax deduction from the federal government, for up to 60% of the value of the land. Using this method, the DRECP could save up to 60% on the cost of land acquisition for protection or restoration purposes.

California Greenhouse Gas Reduction Fund

Assembly Bill 32, the Global Warming Solutions Act of 2006, directed the California Air Resources Board (CARB) to address climate change using multiyear programs to reduce greenhouse gas (GHG) emissions in California.[11] CARB has adopted a Scoping Plan that describes the approach California will take to reduce GHG emissions and achieve the goal of reducing emissions to 1990 levels by 2020. In Appendix C of the first update to the Scoping Plan, the DRECP is highlighted by CARB as a planning strategy to increase renewable energy production and reduce GHG emissions from the energy sector.

The Cap-and-Trade Program, a key element of the Scoping Plan, began in 2012. A portion of the GHG emissions permits (allowances) established by the Cap-and-Trade Program are sold at quarterly auctions and reserve sales. The Legislature and Governor appropriate proceeds from the sale of State-owned allowances for projects that support the goals of AB 32. Strategic investment of these proceeds furthers the goals of AB 32 by reducing GHG emissions, providing net GHG sequestration, and supporting the long-term, transformative efforts needed to improve public and environmental health and develop a clean energy economy.[12]

The auctioned allowances could generate $12 to $45 billion through 2020.[13] The enacted State Budget for FY 2014-15 appropriates $832 million in auction proceeds to 11 state agencies to begin funding programs that will reduce GHG emissions, provide direct investments and benefits in disadvantaged communities, and provide additional environmental and economic co-benefits.[14] Of that amount, $630 million is for sustainable communities and clean transportation programs, including high-speed rail, $110 million for energy efficiency and clean energy programs, and $92 million for natural resources and

---

11 See http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/auctionproceeds.htm.

12 See http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/final_investment_plan.pdf.

13 See Legislative Analyst's Office, *The 2014-15 Budget: Cap-and-Trade Auction Revenue Expenditure Plan*, February 24, 2014, http://www.lao.ca.gov/reports/2014/budget/cap-and-trade/auction-revenue-expenditure-022414.aspx.

14 See http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/budgetappropriations.htm; and http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2014-15budgetcapandtradeauctionproceeds.pdf

waste diversion programs. CDFW received $30 million to restore wetlands. The Legislature and the Governor also enacted Senate Bill 862, which provides for continuous appropriations of future year's GGRF monies for transportation, transit, land-use, housing, and agricultural land preservation programs.

The DRECP appears to be eligible for funding from the California Greenhouse Gas Reduction Fund because once implemented the Plan will facilitate development of low and zero GHG emitting renewable resources. Funds might be used to lower the costs of developing renewables in highly productive locations, to mitigate the impacts of such development on local disadvantaged communities, and provide additional environmental and economic benefits by conserving natural resources. Funding the DRECP from this source would depend on allocations, relative cost-effectiveness and nexus with GHG reductions compared to other available activities such as the High Speed Rail Project in the State Budget.

II.3.1.8.5.3 Other Funding Sources

Interest Income

The DRECP is expected to gain limited income from interest on revenue not yet spent. Future interest rates are uncertain. The average apportionment yield rates earned on the State of California Investment Pooled Money Investment Account-Surplus Investment Fund balances averaged 2.2% over the 10-year period of 2002 through 2011. During this 10-year period, the highest quarterly rate was 5.2% in 2007 and the lowest was 0.4% in 2011 (California State Controller's Office 2014).

Endowment

An endowment is a method used to generate annual management funding over long time horizons. The endowment is a sum of money held in an interest-bearing account in an amount sufficient to generate enough yearly income to fund annual management, maintenance, monitoring, and other activities on mitigation lands. Endowments will be managed to fund mitigation activities for specific Covered Activities at the outset of those Activities. Grants from federal agencies typically do not fund endowments.

Senate Bill 1094, which was enacted in September 2012 and which amended Government Code Section 65965 and added Sections 65965–65968, sets forth types of public and private entities that can hold endowment funds, which are defined as those funds "conveyed solely for the long-term stewardship of a mitigation property" (California Government Code, Section 65965[a]). Entities that can generally hold endowments include specified types of governmental entities, special districts, non-profit organizations, community foundations, and congressionally chartered organizations. Whether a qualified entity can hold a particular endowment depends on a series of factors relating to its

relationship to the mitigation property (California Government Code, Section 65968). Pursuant to SB 1094, endowments are "charitable trusts that are permanently restricted to paying the costs of long-term management and stewardship of the mitigation property for which the funds were set aside" (California Government Code, Section 65965[a]). While nothing in SB 1094 requires an endowment for a mitigation property, this statutory scheme governs the holding, investment, and expenditure of endowments required by state or local agencies as a condition of approving a project permit or approval.

At the end of the permit term, certain management and administrative costs relating to the mitigation property will continue in perpetuity. These costs will be paid from the endowment during the permit term. Interest from the fund will be used for ongoing management and administrative costs following the end of the permit. The annual rate of return on the endowment funds affects the availability of annual funds: the lower the rate earned on endowment funds, the higher the initial principal endowment costs. Costs to be paid from the endowment include ongoing costs for preserve management, administration, and land use monitoring.

II.3.2 BLM LUPA Elements of the Preferred Alternative

The BLM LUPA elements of the DRECP as described above include DFAs, SAAs, FAAs, portions of the reserve design—National Conservation Lands (also referred to as NLCS designations), Wild and Scenic Rivers, National Scenic and Historic Trails, ACECs, and Wildlife Allocations (depicted in Figure II.3-4 and summarized in Table II.3-42). In addition to the interagency components, the LUPA also contains Special Recreation Management Areas (SRMAs) and CMAs for the following resources:

- Air Resources
- Comprehensive Trails and Travel Management
- Cultural Resources and Tribal Interest
- Lands and Reality
- Livestock Grazing
- Minerals
- Paleontology
- Recreation and Visitor Services
- Soil, Water, and Water-Dependent Resources
- Special Vegetation Features
- Vegetation
- Visual Resources Management

- Wild Horses and Burros
- Wilderness Characteristics

BLM Special-Status Species are addressed in Section II.3.1.2.5.

The BLM LUPA also includes land use allocations to replace the multiple-use classes (MUCs), and establishes Visual Resource Management (VRM) classes.

The BLM LUPA elements outside of the DRECP, but within the California Desert Conservation Area (CDCA), consist of land use allocations to replace the MUCs, establishment of VRM Classes, and modification of existing NLCS designations. The DRECP BLM LUPA does not otherwise amend any BLM Land Use Plan for areas outside the DRECP boundary.

Land use plan decisions for public lands fall into two categories: desired outcomes (goals and objectives) and allowable (including restricted or prohibited) uses and actions anticipated to achieve desired outcomes (BLM Land Use Planning Handbook, H-1601-1). In the DRECP, CMAs represent those management actions and allowable uses.

Approximately 9,834,000 acres within the Planning Area occur within the BLM LUPA on BLM-administered lands. Under the Preferred Alternative, approximately 367,000 acres of DFAs occur on BLM-administered lands.

In this area, existing conservation areas on BLM lands totals 3,264,000 acres, including 3,260,000 acres of LLPAs. All of the BLM LLPAs are Wilderness Areas or Wilderness Study Areas and management to meet the statute of the Wilderness Act of 1964 and to ensure these congressionally designated areas meet DRECP conservation goals.

As shown in Table II.3-43, of the 4,900,000 acres of BLM LUPA conservation designations on BLM-administered lands, 1,362,000 acres (28%) would be designated as Existing or Proposed ACEC, 3,229,000 acres (66%) would be Existing or Proposed ACEC and National Conservation Lands, 291,000 acres (6%) would be National Conservation Lands only, and 18,000 acres (less than 1%) would be Wildlife Allocation. Land use allocations and limitations are described in Section II.3.2.2.

Table II.3-42
Interagency Preferred Alternative within the BLM LUPA

Alternative Components	Acreage[1]
DFAs	**367,000**
Study Area Lands	**106,000**
Future Assessment Areas	58,000
Special Analysis Areas	35,000
DRECP Variance Lands	13,000

Table II.3-42
Interagency Preferred Alternative within the BLM LUPA

Alternative Components	Acreage[1]
DRECP Plan-Wide Reserve Design Envelope	**8,164,000**
Existing conservation areas[2]	3,264,000
BLM LUPA conservation designations[3]	4,900,000
Urban Areas, Other Lands, and Undesignated Areas	**1,198,000**
Impervious and Urban Built-up Land	72,000
BLM Open OHV Areas	235,000
Imperial Sand Dunes, including the BLM Open OHV Area	127,000
Johnson Valley OHV Shared Use Area	54,000
Undesignated Areas	709,000
Total	**9,834,000**

Notes: BLM LUPA conservation designations include NLCS lands, ACECs, and Wildlife Allocations. Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA would also designate approximately 2,531,000 acres of SRMAs on BLM-administered lands in addition to the 193,000 acres of existing SRMAs on BLM-administered lands, which are BLM designation overlays that overlap portions of the components provided in this table. Impervious and urban built-up lands occur within BLM LUPA conservation designations and DFAs where not explicitly included in the urban category reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

1 Acreages reported are on BLM-administered lands only within the BLM LUPA area.

2 BLM existing conservation areas include areas considered LLPA-designated Wilderness, Wilderness Study Areas, and National Historic Trails. See the Glossary of Terms for more detail.

3 BLM LUPA conservation designations include proposed NLCS, and existing, proposed and ACEC and Wildlife allocations. See the table below and Glossary of Terms for more detail.

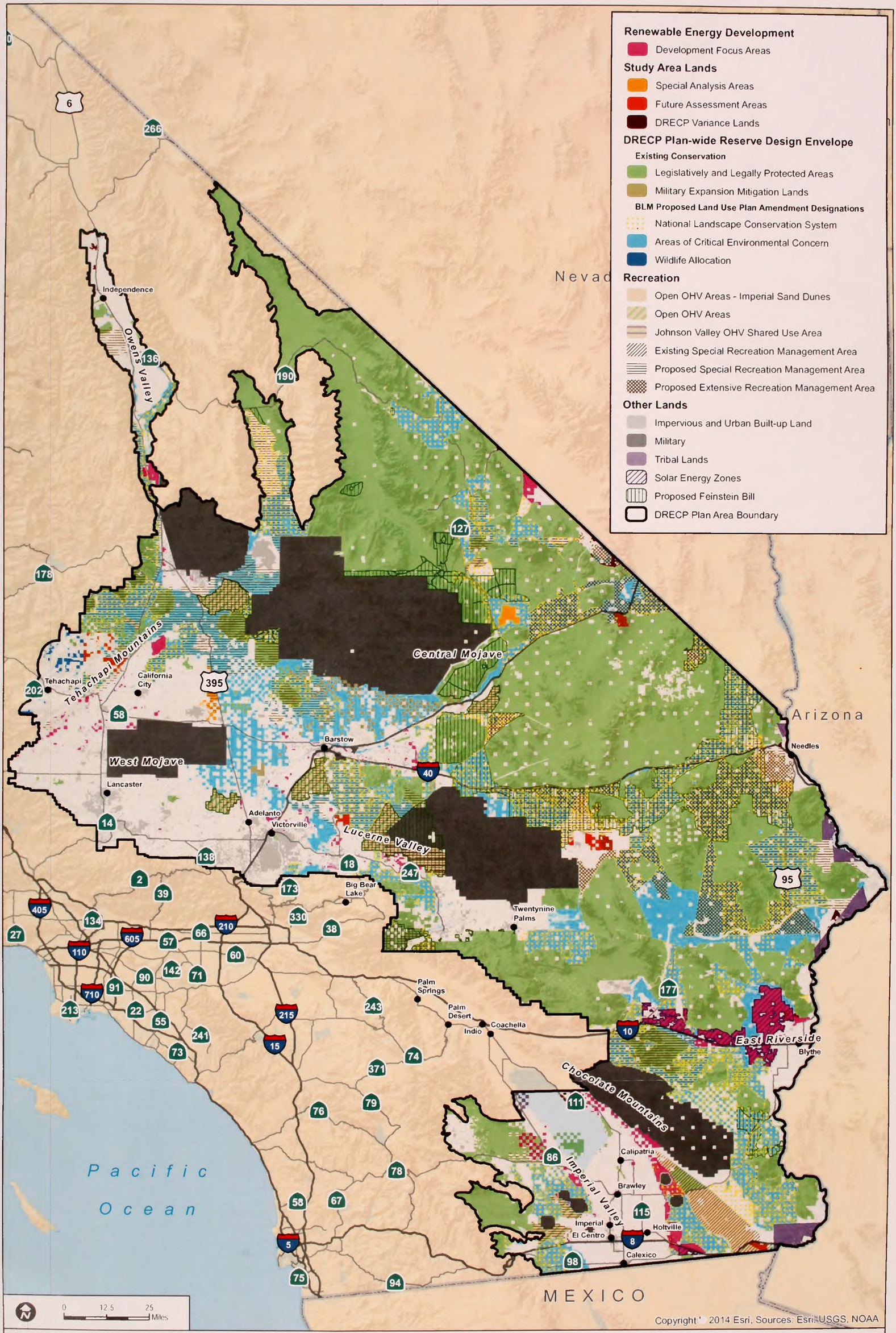
Table II.3-43
Preferred Alternative BLM LUPA Conservation Designations within the BLM LUPA

BLM LUPA Conservation Designation	Acreage[1,2]
NLCS	291,000
NLCS (and Existing ACEC)	1,648,000
NLCS (and Proposed ACEC)	1,581,000
Existing ACEC	369,000
Proposed ACEC	993,000
Wildlife Allocation	18,000
Total	**4,900,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

1 Acreages reported are on BLM-administered lands only within the BLM LUPA area.

2 Approximately 849,000 acres of BLM LUPA conservation designations on BLM-administered lands occur within existing conservation areas and 14,000 acres occur within Other Lands. These overlapping acres are not reported in this table.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.3-4

Preferred Alternative - BLM LUPA

INTENTIONALLY LEFT BLANK

In addition to the proposed BLM LUPA conservation designations, the Preferred Alternative includes proposed BLM LUPA SRMAs and Extensive Recreation Management Areas (ERMAs), as shown in Table II.3-44. Land use allocations and limitations are described in Section II.3.2.2.

Table II.3-44
Preferred Alternative Special Recreation Management Areas and Extensive Recreation Management Areas Within the BLM LUPA

SRMA/ERMA	Acreage[1]
Existing SRMA	193,000
Proposed SRMA	2,531,000
Proposed ERMA	879,000
Total	**3,603,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[1] Acreages reported are on BLM-administered lands only within the BLM LUPA area.

The proposed BLM LUPA would not modify existing energy corridors, including "corridors of concern" defined in the Section 368 Energy Corridors settlement agreement described in Section I.2.1.7.7.

II.3.2.1 BLM Renewable Energy Policies

II.3.2.1.1 Development Incentives in DFAs

Through the DRECP, the BLM is proposing a variety of incentives to steer future utility-scale renewable energy development to the DFAs. As noted in the table below, some of the incentives would require changes in BLM regulations and policies. These incentives would only apply if those changes are adopted. These incentives include those described in the BLM's Solar PEIS ROD for utility-scale solar development in the Solar Energy Zones (SEZs). Under the DRECP, these incentives would also apply to solar, wind, and geothermal development in DFAs, as well as additional incentives. Unless mentioned below, the BLM will apply its current regulations and policies when processing ROW applications in DFAs (e.g. compliance with the National Historic Preservation Act will be conducted in accordance with 36 CFR Part 800 and IM 2013-20, or its successor).

The proposed incentives and their applicability to the different energy technologies are contained in Table II.3-45.

Table II.3-45
DRECP Incentives for Renewable Energy Development within Development Focus Areas on BLM-Administered Land

Development Focus Area Incentive	Solar	Wind	Geothermal
Facilitate Streamlined Permitting[15]			
The BLM will commit to adhere internally to strict schedules (consistent with applicable laws)	Yes	Yes	Yes
The DOI will undertake interagency coordination to expedite service and provide priority processing to projects in DFAs	Yes	Yes	Yes
The BLM will maintain RECOs as long as needed to assist with efficient authorization of projects in DFAs	Yes	Yes	Yes
The BLM may establish a competitive process for DFAs consistent with existing regulations or through new rulemaking[16]	Yes	Yes, with measures to protect initial investment of testing	No; already established in federal regulations at 43 CFR subpart 3203
Prioritize development in DFAs, particularly in areas with high energy generation potential and low resource conflicts.	Yes	Yes	Yes
The BLM will prioritize development in DFAs. This includes having a single point of contact per project and adopting internal procedures to ensure accountability to schedules and quality.	Yes	Yes	Yes
The BLM will tier project-level NEPA analysis to the DRECP EIS for renewable energy projects in DFAs.	Yes	Yes	Yes

15 These actions would be implemented through BLM Policy or Regulation and are not part of the Land Use Plan Amendment.

16 The BLM may establish a competitive process for DFAs where appropriate under existing regulations at 43 CFR 2804.23. New regulations are also being prepared, as an implementation action from the Solar PEIS, to facilitate a competitive leasing process for both solar and wind energy development in designated leasing areas (which could include DFAs). In DFAs in which BLM-administered lands are scattered or comprise only a small portion of the total acreage, the BLM would not establish a competitive process. However, the BLM may take other actions to incentivize renewable energy in these DFAs, such as reduction of rental payments under the authority of 43 CFR 2806.15.

Table II.3-45
DRECP Incentives for Renewable Energy Development within Development Focus Areas on BLM-Administered Land

Development Focus Area Incentive	Solar	Wind	Geothermal
The BLM will coordinate with DOD on potential applications for solar power towers and wind in DFAs identified by DOD as high or moderate risk to testing and training before accepting applications.	Yes	Yes	NA
The BLM will integrate planned transmission corridor improvements developed by the Transmission Technical Group.	Yes	Yes	Yes
Improve and Facilitate Mitigation			
The BLM will develop DFA mitigation strategies to simplify the mitigation process and provide financial certainty.	Yes	Yes	Yes
The BLM will develop and utilize appropriate tools to efficiently implement mitigation (Tools may include applicant and third-party implementation, and mitigation deposit accounts, such as the REAT-NFWF Mitigation Account.	Yes	Yes	Yes
The BLM will utilize the USFWS Region 8 golden eagle framework guidance, or most up to date document, as a means to facilitate the potential for streamlining future Bald and Golden Eagle Protection Act permitting in the DFAs.	Yes	Yes	Yes
The BLM will utilize the analysis in the DRECP's ESA Section 7 consultation documents, and any other applicable DRECP documents, when considering project-level authorizations in DFAs.	Yes	Yes	Yes
Facilitate Permitting of Needed Transmission			
The BLM will commit staff and prioritize projects that provide needed transmission to the DFAs.[17]	Yes	Yes	Yes

[17] These actions would be implemented through BLM Policy or Regulation and are not part of the Land Use Plan Amendment.

Table II.3-45
DRECP Incentives for Renewable Energy Development within Development Focus Areas on BLM-Administered Land

Development Focus Area Incentive	Solar	Wind	Geothermal
The BLM will prioritize transmission associated with DFAs, and will tier transmission NEPA to DRECP documents to the greatest extent practicable[18]	Yes	Yes	Yes
Provide Economic Incentives			
Projects will require lower cost recovery in DFAs because of upfront data collection and environmental review.[19]	Yes	Yes	NA—Cost recovery does not apply to geothermal leasing.
Projects will have a longer phase-in period for rental payments in DFAs.[20]	Yes	Yes, as permitted by BLM regulation and policy.	No—Geothermal Lease rental requirements are addressed in 43 CFR Subpart 3211.
The BLM will charge fixed megawatt capacity fee rental payment for the life of the project in DFAs.[21]	Yes	Yes, as permitted by BLM regulation and policy.	No—Lease Royalty rates for leases issued after August 8, 2005 were established in the 2005 Energy Policy Act, and are incorporated into federal regulations at 43 CFR 3211.17.
The BLM will charge limited base acreage rental payments in DFAs.[22]	Yes	Yes, as permitted by BLM regulation and policy.	No—Geothermal Lease rental requirements are addressed in 43 CFR Subpart 3211.

18 These actions would be implemented through BLM Policy or Regulation and are not part of the Land Use Plan Amendment.
19 These actions would be implemented through BLM Policy or Regulation and are not part of the Land Use Plan Amendment.
20 These actions would be implemented through BLM Policy or Regulation and are not part of the Land Use Plan Amendment.
21 These actions would be implemented through BLM Policy or Regulation and are not part of the Land Use Plan Amendment.
22 These actions would be implemented through BLM Policy or Regulation and are not part of the Land Use Plan Amendment.

Table II.3-45
DRECP Incentives for Renewable Energy Development within Development Focus Areas on BLM-Administered Land

Development Focus Area Incentive	Solar	Wind	Geothermal
The BLM will restructure bonding requirements in DFAs (e.g., a fixed or standard bond per acre).[23]	Yes	Yes, as permitted by BLM regulation and policy.	No—general geothermal bond requirements are addressed in 43 CFR Subpart 3214. Additional bond requirements specific to exploration activities are addressed in subpart 3251.15; drilling operations, Section 3261.18; and utilization operations, Section 3271.12 and Section 3273.19.
The BLM will offer 30-year fixed term lease with fixed rental fee in DFAs.[24]	Yes	Yes, as permitted by BLM regulation and policy.	No—geothermal lease terms are addressed in 43 CFR subpart 3207
Development in DFAs should result in less administrative oversight and less need for administrative costs and processing time.[25]	Yes	Yes	Yes—within requirements in 43 CFR 3211.
Withdrawal of Lands			
Public lands in DFAs would be proposed for withdrawal, in accordance with regulation, subject to valid existing rights, from settlement, location, or entry under the general land laws, as follows:	Yes	Yes	Yes

23 These actions would be implemented through BLM Policy or Regulation and are not part of the Land Use Plan Amendment.
24 These actions would be implemented through BLM Policy or Regulation and are not part of the Land Use Plan Amendment.
25 These actions would be implemented through BLM Policy or Regulation and are not part of the Land Use Plan Amendment.

Table II.3-45
DRECP Incentives for Renewable Energy Development within Development Focus Areas on BLM-Administered Land

Development Focus Area Incentive	Solar	Wind	Geothermal
• New mining claims could not be filed, however valid mining claims take precedence over future renewable energy development • Lands in DFAs would only be sold or exchanged if BLM determines the disposal would either facilitate renewable energy development or would not preclude such development. • Withdrawn lands would remain open to mineral leasing, geothermal leasing, and mineral material laws Lands would remain open to ROW authorizations and land leases or permits.			
Incentive for Multiple Technology			
DFAs where solar, wind, and/or geothermal can operate in the same area at the same time will be identified to facilitate the most efficient use of resources and space.	Yes	Yes	Yes
The mitigation/compensation requirements can be proportionally split between the two or three types of renewable energy projects sited on the same piece of ground and will not be additive.	Yes	Yes	Yes
To the extent practicable, surveys and assessments for wildlife or plant species and cultural resources will be combined or consolidated to address a dual or triple technology site.	Yes	Yes	Yes
Dual or triple technology projects can use a single NEPA document to analyze the project.	Yes	Yes	Yes

II.3.2.1.2 DRECP Variance Land Procedures

The BLM's Solar PEIS ROD defines a variance area as "an area that may be available for utility-scale solar energy ROW with special stipulations or considerations." The BLM identified all lands outside of exclusion areas and SEZs as variance areas for utility-scale solar energy development.

The Solar PEIS ROD allows applications in variance areas to be processed on a case-by-case basis, but applicants have the responsibility to demonstrate that proposed projects will avoid, minimize, and/or mitigate, as necessary, sensitive resources, and will be compatible with state and local plans (Final PEIS, Section 2.2.2.3).

Areas in the DRECP identified as DRECP Variance Lands are a subset of the variance lands identified in the Solar PEIS ROD. The BLM applied the same screening criteria as the Solar PEIS using new, updated and finer scale data. Additional screening criteria specific to the resources in the Land Use Plans were also applied to exclude additional lands to further reduce potential resource conflicts and incorporate new information into decision making. This process reduced the number of acres of variance lands compared to those designated in the Solar PEIS ROD. A list of the Solar PEIS screening criteria that had new, updated or finer scale data employed and the additional Land Use Plan specific screening criteria appears in Table II.3-46.

Additionally, some lands that are not currently in variance areas would be designated as DRECP Variance Lands. All DRECP Variance Lands would allow applications for solar, wind or geothermal technologies under similar analysis and management guidelines.

Table II.3-46
Solar PEIS ROD Variance Land Screening Criteria with New, Updated, or Finer Scale Data and Land Use Plan Specific Screening Criteria Used to Identify DRECP Variance Lands

- DFAs – applications in DFAs will not be subject to the variance process.
- Interagency biological reserve envelope
- Lands included in new and expanded ACECs and National Conservation Lands.
- All designated and proposed critical habitat areas for species protected under the ESA of 1973 (as amended).
- All areas with BLM inventoried wilderness characteristics.
- Developed recreational facilities, special-use permit recreation sites, all designated OHV-open areas, all SRMAs, and all Long-Term Visitor Areas identified in the Preferred Alternative, unless the SRMA is within a Future or Special Assessment Area, as described in Section II.3.2.
- All areas where the BLM has made a commitment to state agency partners and other entities to manage sensitive species habitat.
- All Desert Tortoise translocation sites identified in applicable land use plans, project-level mitigation plans or ESA Section 7 Biological Opinions.

Table II.3-46
Solar PEIS ROD Variance Land Screening Criteria with New, Updated, or Finer Scale Data and Land Use Plan Specific Screening Criteria Used to Identify DRECP Variance Lands

- All wildlife migratory and movement corridors identified in applicable land use plans.
- All Big Game Winter Ranges identified in applicable land use plans, such as mule deer area in the Bishop RMP.
- Lands Classified as Visual Resource Management (VRM) Class I or II in the applicable action alternatives.
- National Historic and Natural Landmarks identified in applicable land use plans and identified in the applicable Action alternatives.
- Lands within the boundaries of properties listed in the National Register of Historic Places.
- Designated Wild and Scenic River segments, and river segments determined to be eligible or suitable for Wild and Scenic River status identified in applicable land use plans, including any associated protective corridors identified in the Wild and Scenic River designation or proposal.
- Lands within a solar, wind or geothermal energy development application area found to be inappropriate for energy development through an environmental review process and ROD/CDCA Plan Amendment.
- All lands within the proposed Mojave Trails National Monument (S.138 California Desert Protection Act of 2011) and all conservation lands acquired outside of the proposed Monument through donations or use of Land and Water Conservation Funds.
- Variance land parcels smaller than 280 acres and/or not capable of being combined with other BLM variance parcels or non-BLM lands in DFAs to reach the 280-acre minimum size.[26]
- Narrow stringers on spur roads between existing or proposed areas conserved or specially managed.
- The area around ancient pluvial lake basins that contain Late-Pleistocene and Holocene shorelines, the exclusion areas to be determined based on the hydrologic history of the particular pluvial lake and to include a 500-meter buffer extending out from the highest strandline dating to the time of human occupation.
- Known archaeological sites.
- Areas within the viewshed of National Historic Sites.
- Areas within five miles of the centerline of National Scenic and Historic Trail Corridors.
- All microphyll woodlands.
- Lands within 0.25 miles of any surface water source or riparian areas (seeps, springs, lakes, ponds, streams, perennial rivers, and streams).
- Wild Horse or Burro Herd Management Areas.

DRECP Variance Lands would be available for solar, wind, and/or geothermal development. However, all applications in DRECP Variance Lands will follow the variance process described in Section B.5 of Appendix B of the Solar PEIS ROD. The process includes public outreach and interagency coordination prior to the NEPA process. After completing the

[26] 280 acres is the size of two utility-scale solar projects (20 MW as per CEC) at approximately 7 acres per MW.

steps outlined in Section B.5 of the Solar PEIS ROD, the BLM will make a determination on whether to reject or accept the application. If the BLM rejects an application, that decision must be made with regard for the public interest and be supported by reasoned analysis and an adequate administrative record. Denial of an application constitutes "final agency action" and is therefore subject to administrative appeals to the IBLA.

If the BLM accepts the application and agrees to begin the NEPA process, it is a commitment to begin the NEPA process. The BLM retains its authority to approve, deny, or approve with modifications, the application.

II.3.2.1.3 Future Assessment Areas and Special Analysis Areas on BLM Land

The LUPA would apply the same criteria and processes to FAAs on BLM land as were applied to DRECP Variance Lands in Section II.3.2.1.2. In addition, the following criteria would have to be met before the BLM would accept an application on these lands:

- Consistency with the land designation in which the FAA resides, for example a SRMA.
- Compatibility with other high value resources such as minerals.

II.3.2.1.4 Existing Applications on BLM-Administered Land

The BLM's Land Use Planning Handbook describes how the BLM, during a land use plan amendment process, "should review all proposed implementation actions through the NEPA process to determine whether approval of a proposed action would harm resource values so as to limit the choice of reasonable alternative actions relative to the land use plan decisions being reexamined. Even though the current land use plan may allow an action, the BLM has the discretion to defer or modify proposed implementation actions, such as decisions on individual projects, to reduce the effect of these actions on the resource values being considered in the land use plan amendment process. The appropriate modification to the proposed action is subject to valid existing rights and program-specific regulations" (BLM Land Use Planning Handbook H-1601-1, Section VII.E).

Proposed Solar and Wind Projects on BLM land authorized prior to issuance of the DRECP ROD: Some solar and/or wind applications[27] are, or will be, undergoing environmental analysis (NEPA) and decision-making processes between the publication of this DEIS/DEIR and issuance of the DRECP ROD. The DRECP ROD will not affect solar and wind projects that are authorized prior to completion of the DRECP. Authorized projects are those for which the BLM has offered and the applicant has accepted a ROW grant.

---

[27] The above process does not apply to geothermal projects. Geothermal projects are managed according to regulation 43 CFR 3200.

Projects proposed on BLM lands that are not authorized prior to issuance of the DRECP ROD: Some solar or wind applications are already being evaluated through ongoing, project-specific analysis and decision processes that will not be completed before a DRECP ROD is signed. The land use allocation decisions made in the DRECP ROD (e.g. decisions to establish an ACEC designation or a DFA) will not affect project applications if they meet either of the following criteria:

1. A project that is proposed in a BLM SEZ and that is considered a "pending project" under the Solar PEIS ROD (the project application was filed before June 30, 2009).
2. A project with a published Draft EIS or EA no later than 60 days after release of this DEIS for the DRECP provided the final project-level NEPA document includes:
    a. Analysis using the best available information at the time of publication, including data developed in support of DRECP conservation and recreation strategies, and
    b. Analysis describing the relationship between the project and the DRECP conservation and recreation strategies.

Amendments to project applications or authorized projects that meet either of the criteria listed above will not be subject to the land use decisions of the DRECP, provided that the amendment either (1) does not change the boundaries of the proposed project ROW, or (2) is related to avoiding resource or land conflicts, adapting the project to third-party-owned infrastructure constraints, or using or designating translocation or mitigation lands.

In processing proposed projects, the REAT agencies will continue to apply the NCCP interim process using best available information to assess any conflicts with preliminary conservation goals and objectives as identified in the DRECP Planning Agreement.

Table II.3-47
BLM Solar and Wind Applications with Possible Draft EIS Within 60 Days of DRECP Draft EIS as of July 28, 2014

Application	Serial Number	Solar/ Wind	Current Status	In SEZ?	DEIS by Late Summer 2014?
BrightSource Palen	CACA 48810	Solar	FEIS published 5/13/11; Supplemental DEIS published 7/26/13	Yes	Yes
Bechtel Soda Mountain	CACA 49584	Solar	DEIS published 11/29/13	No	Yes
Iberdrola Tylerhorse	CACA 51561	Wind	DEIS published 4/18/14	No	Possible

The applications listed above either have a published DEIS or could have one within 60 days of the DRECP's Draft EIS publication. This list does not constitute a guarantee that the projects above will reach the Draft EIS milestone by the deadline, nor does it preclude applications not on this list from publishing a Draft EIS by the deadline.

Table II.3-48
Additional California BLM First-in-Line Solar Applications within a Solar Energy Zone

Application	Serial Number	Solar/Wind	Current Status
First Solar Desert Quartzite	CACA 49397	Solar	Pre-NOI
Solar Reserve Imperial	CDCA 49884	Solar	Pre-NOI
Solar Reserve Mule Mountain	CACA 50390	Solar	Pre-NOI
EDF Chuckwalla	CACA 51950	Solar	Pre-NOI
BrightSource Sonoran West	CACA 51967	Solar	Pre-NOI

In addition to applications that reach the Draft EIS milestone within 60 days of the DRECP's Draft EIS, applications in a SEZ that are considered "pending projects" under the Solar PEIS ROD would not be subject to the DRECP. The list above includes additional solar applications in the Riverside East and Imperial East SEZs filed before June 30, 2009.

If a solar or wind ROW grant approved under these provisions is terminated, the BLM will consider amending its land use plan to be consistent with the land use plan for lands surrounding the ROW area. The BLM will consider the goals and objectives of the DRECP when processing future applications in areas where ROWs approved under these provisions are terminated.

II.3.2.2 BLM Conservation Areas

II.3.2.2.1 National Conservation Lands

Public Law 111-11, the Omnibus Public Lands Management Act of 2009, formally established the NLCS which is made up of BLM lands with nationally significant ecological, cultural and scientific values, and is managed to conserve, protect and restore these values. Throughout this document components of the NLCS will be referred to as the National Conservation Lands. Public Law 111-11 applies to the public lands within the boundary of the CDCA, and a different boundary from the DRECP Planning Area. For proposed National Conservation Lands decisions, the BLM considered all the public lands within the CDCA boundary, but not the public lands managed by the Bishop and Bakersfield Field Offices and located outside the CDCA boundary.

Public Law 111-11 identified types of BLM-managed conservation lands to be part of the system, including Wilderness Areas, Wild and Scenic Rivers, National Monuments, National Conservation Areas, National Scenic and Historic Trails, Wilderness Study Areas, and other similar designations. Included within the identified categories, the law states that "public land within the California Desert Conservation Area administered by the Bureau of Land Management for conservation purposes" is to be incorporated into the system. Also included in P.L. 111-11 is direction that BLM is to rely upon ecological, cultural and scientific values in identifying lands administered for conservation purposes.

Of the 10.8 million acres of BLM-administered public lands within the CDCA, approximately 3.9 million acres are currently designated National Conservation Lands. These include Wilderness, Wilderness Study Areas, Wild and Scenic Rivers, National Scenic and Historic Trails, the Santa Rosa and San Jacinto Mountains National Monument and other congressional designations, to include the Mountain Pass Dinosaur-Trackway and the Desert Lilly Sanctuary. The decision to include lands in the NLCS through the DRECP are designed as a planning decisions, and can be modified through a land use plan. These lands, identified for inclusion in the NLCS by way of decisions in the DRECP do not alter, and are in addition to, current National Conservation Lands designations.

Many other areas of the CDCA have special resource values and are currently managed for conservation purposes under administrative designations made through the land use planning process. These include ACECs, Desert Wildlife Management Areas (DWMAs), and Habitat Management Areas (Mohave Ground Squirrel, Flat Tailed Horned Lizard, and the Coachella Valley Fringe-toed Lizard Habitat Management Areas). As a major conservation planning effort for the deserts in southeast California, the DRECP provides the BLM and the public an opportunity to evaluate existing administratively designated conservation areas and to determine which lands meet the definition in Public law 111-11 for inclusion as National Conservation Lands.

The DRECP is a major conservation planning effort for the California desert and provides the BLM and the public with an opportunity to evaluate existing administratively designated conservation areas and to clarify which lands meet the definition in Public law 111-11 for inclusion as National Conservation Lands. Alternative configurations of lands with nationally significant ecological, cultural and scientific values are analyzed for their conservation value and importance. All of the alternatives described below meet the requirements of Public Law 111-11 by applying existing BLM management authority and balancing conservation with renewable energy and other public land multiple uses. The need to support the GCP and the NCCP goals elevates the significance of conservation actions in some areas and for some specific conservation lands. For the purpose of National Conservation Land identification directed under Public Law 111-11, the DRECP will consider all lands within the CDCA boundary as identified in the FLPMA of 1976 (Public

Law 94-579). All other conservation management designations and actions rely on other authorities and management approaches commonly available through land use planning for BLM-managed public lands.

The National Conservation Lands were identified based on having nationally significant ecological, cultural and scientific values as called for under Public Law 111-11 and using the criteria listed below. The BLM identified the footprint for National Conservation Lands in the range of alternatives by use of the following criteria. Alternative configurations of lands with nationally significant ecological, cultural and scientific values are analyzed for their conservation value and importance, using the following criteria.

Primary criteria:

- **Ecological**
  - Species habitat – High quality habitat for multiple native species; or critical habitat for a federally listed species
  - High level of ecological diversity
  - Illustrates a significant natural value or phenomenon that is exemplary in the physiographic region
- **Cultural**
  - Contains a nationally significant prehistoric or historic cultural site that is eligible for the National Register of Historic Places.
  - Contains a nationally significant cultural landscape that provides context and setting for historic properties or is of religious or cultural importance to Indian Tribes.
- **Scientific**
  - Area that has been the focus for significant scientific study or has a natural or cultural value, natural process, or other occurrence of high scientific value for potential future study.

Additional criteria used to develop alternatives:

- **Development pressure** – Area has natural or cultural values representative of other areas under development pressure, or adjoins DFAs.
- **Landscape intactness** – Relatively undisturbed features, unmodified natural environment of fairly large size, and not impacted by numerous developments (e.g. absence of extensive road network, multiple physical facilities such as communication sites, power lines etc.)

- **Scenic quality** – Higher levels of scenic quality as determined by the BLM Visual Resources Inventory process.
- **BLM jurisdiction** – Primarily large blocks of BLM lands (may include interspersed lands managed by other agencies for conservation purposes).
- **Landscape Linkages** – Habitat and landscape-scale linkages to existing National Conservation Lands and other conservation units such as Wilderness Areas, Wilderness Study Areas, Wild and Scenic Rivers, National Trails, etc.

The Preferred Alternative emphasizes habitat connectivity and cultural-botanical resource locations. This alternative contains important wildlife linkages, including critical habitat under the ESA, and other lands with high ecological diversity and integrity. This alternative also includes smaller, yet highly significant, landscape units such as significant cultural and botanical sites that do not link to other protected areas but are still considered to contain nationally significant ecological, cultural, or scientific values. National Conservation Lands (also known as National Landscape Conservation System [NLCS] lands) in this alternative include only areas where BLM has primary jurisdiction (no checkerboard of BLM/private lands), and where the landscape is intact with no large-scale developments. The use allocations of this alternative allow for a variety of uses as long as they can be managed to be compatible with protecting National Conservation Land values. The National Conservation Lands include existing transmission corridors.

This alternative would designate 4,369,000 acres as components of the National Conservation Lands on BLM-administered lands, which includes 849,000 acres within existing conservation areas (LLPAs and MEMLs) and 3,520,000 acres as part of the BLM LUPA conservation designations.

II.3.2.2.1.1 Management of the National Conservation Lands

Although Public Law 111-11 provides for lands within the CDCA to become components of the National Conservation Lands, it does not include or define a process for developing specific management direction to conserve, protect and restore resource values on the identified conservation lands. In addition to the decision to designate lands as part of the NLCS, the each alternative of the LUPA provides specific management direction to meet the objectives of P.L. 111-11. This management direction has been developed at three levels—Planning area wide, subarea, and site or zone specific. All three levels must be considered together to determine the comprehensive direction that will guide management of the National Conservation Lands in the DRECP Planning Area.

1. Planning Area Wide National Conservation Land Management Direction

The use allocations for the National Conservation Lands in the CDCA are the allowable uses that would apply to all National Conservation Lands within the CDCA. The use allocations for the Preferred Alternative are listed below. For resources where there are no specific use allocations for National Conservation Lands, Plan-wide rules would apply unless otherwise specified in the Special Unit Management Plans (Appendix L).

- **Comprehensive Trails and Travel Management** – National Conservation Lands would be designated in accordance to the appropriate Transportation and Travel Management Plan. Future travel management planning will emphasize travel on routes that provide for the enjoyment and enhancement of the ecological, cultural, and scientific values for which individual units are designated, or necessary administrative access to conserve, protect and restore area values.
- **Cultural Resources** - With the exception of research, no actions that would result in adverse effects to historic properties, as defined under Section 106 of National Historic Preservation Act and the implementing regulations at 36 CFR Part 800, will be authorized.
- Lands and Realty
- Land Use Authorizations
- **Sites Authorizations (Non-Renewable Energy, Non-Linear ROWs)** – National Conservation Lands would be avoidance areas.[28] Authorization for site ROWs, leases, or permits that would impact the values for which National Conservation Lands are designated must include mitigation/compensation resulting in a net-benefit to the National Conservation Land unit so that the restoration intent of National Conservation Land management is met. Site authorizations that protect or enhance conservation values, such as those granted as compensatory mitigation for Covered Activities within DFAs or for habitat restoration, would be allowed.
- **Renewable Energy Generation** – National Conservation Lands would be exclusion areas for renewable energy ROWs (development and testing).
- Linear Rights-of-Way
- Transmission would be allowed in existing corridors only.
- National Conservation Lands would be avoidance areas for all other linear ROWs.

[28] Defined as "areas to be avoided but may be available for location of rights-of-way with special stipulations." (BLM Land Use Planning Handbook (H-1601-1), Appendix C, page 21.

- Authorization for linear ROWs that impact the values for which the National Conservation Land unit is designated must include mitigation/compensation resulting in a net benefit to the National Conservation Land unit so that the restoration intent of National Conservation Land management is met.
- Land Tenure
- Exchange would be permitted primarily to acquire non-BLM lands within the National Conservation Lands unit (no lands exchanged out or disposed of unless other conservation lands are acquired that result in a net benefit to the values of the National Conservation Land unit).
- Purchase and donations would also be allowed to acquire non-BLM lands within the National Conservation Lands unit.
- National Conservation Land inholdings would be a priority for acquisition from willing sellers. All inholdings would become part of the National Conservation Lands unit upon acquisition and be subject to associated management requirements.
- Minerals
- **Locatable Minerals** – For the purposes of locatable minerals, National Conservation Lands would be treated as "controlled" or "limited" use areas in the CDCA, requiring a Plan of Operations for greater than casual use under 43 CFR 3809.11.
- **Saleable Minerals** – National Conservation Lands would be available for saleable mineral development, and would require mitigation/compensation that results in net benefit for National Conservation Lands values.
- Leasable Minerals
- National Conservation Lands would be available for leasing with a no surface occupancy stipulation.
- Geothermal and other leasing must protect groundwater quality and quantity.
- **Recreation and Visitor Services** – Commercial and competitive Special Recreation Permits are a discretionary action and would be issued on a case by case basis, for activities consistent with the values of the National Conservation Lands unit and would be prohibited except for those uses that would enhance the opportunity for visitors to experience and enjoy the ecological, cultural, and scientific values of the National Conservation Land unit and would not adversely impact the nationally significant ecological, cultural, or scientific values.
- **Water Resources** – Apply for water rights on a case by case basis to protect water dependent National Conservation Land values.

- **Disturbance caps**[29] - Development in National Conservation Lands would be limited to 1% of total authorized disturbance, or to the level allowed by collocated ACEC, whichever is more restrictive.

2. National Conservation Land Subareas — Description of Values to be Protected

The vast landscapes of the CDCA have been divided into subareas that encompass similar physiography and/or ecological values. Each of these subareas includes a unique combination of specific ecological, cultural and scientific values. Based on the theme of each alternative, the subarea description and maps describe what landscapes and values will be included in the National Conservation Lands. Figure II.3-4 shows the National Conservation Lands on BLM-administered lands. Appendix G provides supplemental maps showing the National Conservation Lands by ecoregion subarea.

The footprint for each subarea is described below.

3. Area-Specific Management Prescriptions for National Conservation Lands and ACECs

Much of the acreage proposed for National Conservation Lands is also identified as existing or proposed ACECs. ACECs are an administrative designation which identifies areas with significant values that require special management. The CDCA currently has over 70 ACECs with a history of protective identification and management of their special values extending back to the original 1980 CDCA Plan. These ACECs and their area-specific values were used as a starting point for identifying potential National Conservation Lands in the DRECP and were evaluated using the 10 criteria described in the introduction above.

Instead of replacing the ACECs or portions of ACECs identified for inclusion as National Conservation Lands with a single designation, both designations have been retained in this draft document to provide for continuity and historical context. To the extent that there is "overlap" between ACEC and National Conservation Lands in the final DRECP decision document, it is the BLM's expectation that it will identify these areas solely as National Conservation Lands. In general, the National Conservation Lands will be managed as larger ecoregional units to protect landscape-wide values, while the ACECs are targeted towards area specific values. However, the site-specific protections of the individual ACEC units complement the broader landscape protections and would be carried forward for particular areas or zones within the broader National Conservation Lands to ensure that the individual values are protected.

---

[29] Wildlife habitat disturbance caps only apply to lands not already included under ACECs or Wildlife Allocation disturbance caps, as described in the Special Unit Management Plans in Appendix L.

In summary, where a National Conservation Lands unit and an ACEC overlap, the National Conservation Lands would incorporate the site-specific management objectives and use allocations of the underlying Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L. Where National Conservation Lands are not underlain by ACECs, site-specific objectives have not been identified and these lands would be managed under the CDCA-landscape wide National Conservation Land described above.

II.3.2.2.1.2 Subarea Descriptions

Basin and Range Subarea

Background Information

The Basin and Range subarea extends from the Nevada state line west to the Sierra Nevada Mountain Range, approximately 85 miles east to west at its widest part, and 130 miles north to south. Elevations range from 1,000 to 12,000 feet; mountains rise abruptly from the desert floor, so that even across short distances, plant communities vary greatly. These include Joshua tree woodland, sagebrush steppe, pinyon-juniper woodland, and cottonwood/willow riparian vegetation; and in the White-Inyo Mountain Range, unique alpine vegetation and subalpine bristlecone and limber pine woodlands. The south end of the subarea gradually transitions to Mojave Desert vegetation dominated by creosote bush and white bursage. Streams, springs, and riparian areas serve as oases in the harsh, arid environment.

These specially designated units play an important conservation role in the subarea. They have already been designated by Congress for conservation purposes, and they are not subject to the alternatives under this plan: White Mountains, Piper Mountains, Sylvania Mountains, Inyo Mountains, Malpais Mesa, Manly Peak, Coso Range, Darwin Falls, Argus Range, Surprise Canyon, El Paso Mountains, Sacatar Trail, and Owens Peak Wilderness Areas; Great Falls Basin Wilderness Study Area; and Cottonwood Creek Wild and Scenic River.

The following areas are not managed by the BLM and are not part of the plan alternatives but contribute to the habitat conservation goals of the DRECP: Death Valley National Park, and the eastern portion of Red Rock Canyon State Park.

Alternative Description

<u>Ecological Values</u>

This alternative would include some of the largest undeveloped expanses of public lands. The diversity of vegetation alliances supports diverse wildlife species, including desert tortoise, Mohave ground squirrel, Golden Eagle, Burrowing Owl, Sierran tree frog, red-

spotted toad, and numerous bird and reptile species. The alternative also includes habitat for sensitive species such as desert bighorn sheep, Inyo slender salamander, and Swainson's Hawk; numerous sensitive bat species such as Townsend's big-eared bat associated with old mine features; and potential winter habitat for a Greater Sage-Grouse population at the southwest extreme of their range. Unusual monarch butterfly over-wintering sites occur in the riparian canyons of the Inyo Mountains. Diverse year-round resident wildlife species of the canyons include ringtails, mountain lions, bobcats, kit foxes, and gray fox.

The northern half of this subarea includes parts of Deep Springs and Fish Lake Valleys, dominated by shrubs such as *Menadora*, winterfat, and other warm-season shrubs and grasses that receive summer rains. Deep Springs Valley is a high desert valley in the Inyo-White Mountains that contains Deep Springs Lake, a shallow salt lake. Migrating birds flock to the lake and associated springs during the spring and fall. The BLM Sensitive black toad (*Anaxyrus exsul*) is an isolated species restricted to a few wetlands in Deep Springs Valley. This alternative includes black toad habitat north of California State Hwy 168.

To the south are the lower-elevation Eureka and Saline Valleys, where the Great Basin transitions into the Mojave Desert; Panamint Valley and Lake; and the Panamint, Slate, and Argus Mountain Ranges. The valleys have sparsely scattered springs, wetlands, and ephemeral wetlands; and support a high diversity of plant and wildlife species, including endemic species such as alkali fairy shrimp, spring snails, Panamint daisy, Panamint dudleya, and the Panamint alligator lizard. Panamint Valley's unique desert wetland communities such as Warm Sulfur Springs include mesquite bosques, and both freshwater and saltwater marshes that provides habitat for waterfowl, wading birds, amphibians, and other species. Sand dunes are home to endemic invertebrate species, such as a scarab beetle and a weevil, *Trigonoscuta* (as yet unnamed). Greasewood (*Sarcobatus vermiculatus*) communities occur in the saline soil of the playa areas. In California, Utah pickleweed (*Sarcocornia utahensis*) occurs only in this area and in adjacent Death Valley National Park. This alternative also includes another unusual greasewood plant assemblage growing on sand dune hummocks.

The National Conservation Lands in this alternative also include designated critical habitat for the Inyo California Towhee, a federally listed Threatened species found only in isolated riparian areas of the Argus Mountain Range.

National Conservation Lands in the Preferred Alternative include habitat linkages among a number of designated BLM Wilderness Areas, the Inyo National Forest, undeveloped military lands, and Death Valley National Park, with intact ecosystems connecting these large areas. These linkages for wildlife migration are critical to the conservation of certain species, especially with respect to climate change. These species include the desert tortoise,

desert bighorn sheep, and Mohave ground squirrel. National Conservation Lands in this alternative include four core population centers of the Mohave ground squirrel, which is listed by the State as Threatened and by the BLM as Sensitive.

National Conservation Lands in this alternative include a segment of the Pacific migratory bird flyway. Songbirds, shorebirds, and waterfowl pass through Indian Wells Valley and Rose Valley on their way to breeding grounds. The flyway has stop-over riparian and wetland habitat in the Sierra Nevada canyons and at Little Lake and Haiwee Reservoir. Riparian areas here provide important migratory stop-over habitat for the federally listed Least Bell's Vireo and Southwest Willow Flycatcher. This flyway also provides excellent habitat for Golden Eagles, Prairie Falcons, and other raptors, with nearby cliffs for nesting and the valley floor for foraging. Little Lake Watchable Wildlife Area, close to both water and cliffs, is an exceptional place to view swallows, raptors, and waterfowl.

Another designated Watchable Wildlife Area included in this alternative's National Conservation Lands, the Haiwee Deer Winter Range site, offers opportunities to see a different kind of vital seasonal migration: that of the East Monache mule deer herd. As heavy winter snows begin to fall in the mountains, 600-700 deer move down to the valley floor.

Cultural Values

The cultural values of the Basin and Range subarea are as diverse as the ecological values and include some of the richest cultural areas in the California desert, including landscapes and sites associated with the earliest prehistoric Native American occupation, and some of the oldest historic mining areas in California. This area falls within the traditional homelands of several tribal groups; sacred sites, traditional cultural places, and areas of religious and cultural significance to these groups are found throughout. Abundant cultural properties include well-known prehistoric and historic archaeological sites and properties of traditional religious and cultural importance to Indian Tribes. There is a high potential for hundreds of cultural sites that have not yet been recorded.

Within National Conservation Lands under the Preferred Alternative, resources listed on the National Register of Historic Places include Fossil Falls Archaeological District, Last Chance Canyon Archaeological District, Saline Valley Salt Tram, and Ayers Rock Petroglyph Site. Many more sites are eligible for listing, including the First Los Angeles Aqueduct, the mining town of Cerro Gordo, the Southern Owens Valley Mortuary Complex, historic White Mountain City, the Manzanar Reservoir and Sand Trap, and the charcoal pits at Conglomerate Mesa.

In the northernmost National Conservation Lands in this alternative, in Fish Lake, Deep Springs, and Eureka Valleys, archaeological research has been limited but has nonetheless

identified prehistoric village complexes, lithic scatters, and rock art sites. Historic use has been associated with mining, particularly the towns of White Mountain City at the mouth of Wyman Canyon and Roachville at the mouth of Cottonwood Creek.

Conglomerate Mesa has a unique collection of historic era mining features, particularly associated with early charcoal production for Cerro Gordo and smelters in the Owens Valley. The area is also identified in the ethnographic literature as a traditional pinyon nut gathering location, as evidenced by the presence of brush structures, lithic materials, and ceramics dating to the contact period in the Owens Valley and earlier. The mining history of this area details battles between native groups and charcoal burners who were competing for the pinyon resources. Cerro Gordo was the largest silver producing mine in Inyo County and provided much of the revenue required to build the city of Los Angeles.

The canyons of the eastern Sierra Nevada were a critical part of the Native American seasonal round. Not only did these places have necessary water in the summer, they provided access points to the hunting grounds of the Sierra Nevada crest and sacred areas associated with mountains. They also served as conduits for trade with groups over the mountains in the Central Valley and beyond to the Coast. These sites include many large, prehistoric National Register of Historic Places eligible properties in relatively undisturbed contexts, and have high densities of obsidian and other types of lithic material. The sites in these canyons have the potential to answer some of the most pressing questions in California archaeology, particularly about trade, human adaptation to changing environments, and culture contact and interaction.

The National Conservation Lands in the Preferred Alternative also encompass portions of the footprint of the Los Angeles Aqueduct. The first aqueduct, built by the Los Angeles Department of Water and Power in 1913, redefined the history of Owens, Rose, and Indian Wells Valleys. The First LA Aqueduct has been listed as a Historic Civil Engineering Landmark; and, with all of the associated labor camps along the line, has been recommended eligible for listing on the National Register of Historic Places.

The area between the eastern slope of the Sierra Nevada, the southern shoreline of the Owens Dry Lake, Haiwee Reservoirs, and the Coso Mountain Range has extensive rock art, prehistoric habitation sites, and large scatters of lithic materials from the nearby Sugarloaf Obsidian Source, located on China Lake Naval Air Weapons Station. Prehistoric burial complexes also occur throughout this area. At the Rose Spring archaeological site complex, excavations revealed a well stratified subsurface archaeological deposit which was successfully used to date the introduction of bow and arrow technology to Eastern California. The bow-and-arrow event, about 1500 to 1000 years ago, changed the patterns of prehistory not only in this region but throughout the Great Basin and neighboring southwest.

This alternative also includes National Conservation Lands designation for the Ayers Rock area, which encompasses a complex of prehistoric archaeological resources, the most prominent of which is a monolithic boulder renowned for panels of Native American rock art, specifically, painted polychrome pictographs. Limited excavation in the vicinity has uncovered a variety of cultural material, including basketry, beads, and human remains.

Seven miles from Ayers Rock on the China Lake Naval Air Weapons Station are two of the most important locales in the region: the Coso Hot Springs, a National Register Listed Sacred Site, and the Coso Rock Art District, a National Historic Landmark and World Heritage Site. National Conservation Lands in this alternative encompass much of the land between these sacred sites on Navy lands and resources on BLM lands, thus including a culturally significant landscape.

In the Fossil Falls Archaeological District, cultural research attributes the rock art as a distinctive style termed Coso Representation, associated with local Numic-speaking groups such as the Northern Paiute, Panamint Shoshone, Coso Shoshone, and Kawaiisu. Studies including excavations at the Stahl Site, south of Fossil Falls, have identified cultural components from more than 10,000 years before present. Also included in this alternative's National Conservation Lands is the Last Chance Canyon area, with a portion of the Last Chance Canyon National Register Archaeological District which has an assemblage identifying human occupation in excess of 10,000 years. The area includes open air campsites, extensive house ring complexes, rock shelters, lithic reduction locales, cryptocrystalline quarries, milling complexes, and petroglyphs. Archaeological materials represent aboriginal occupation from the Late Pleistocene to the historic period.

Warm Sulfur Spring in Panamint Valley is a Tribal Cooperative Activity/Special Use Area for traditional practices within the Timbisha Shoshone Homeland. The Timbisha tribe attaches considerable importance to the springs, desert marsh, and mesquite groves of this area.

Historic resources are likewise abundant, many of which are superb examples of sites associated with exploration by the Spanish and Euro-Americans, contact with Native American communities in California, the advancement and development of the Western Frontier, American vernacular architecture, mining landscapes in the West, and the Civilian Conservation Corps. Historic mining features predominate the historic archaeological assemblage, particularly in the Panamint-Argus region, Trona-Searles Lake area and the Darwin region.

Many prehistoric and historic resources in this alternative's National Conservation Lands have not been formally evaluated, but are considered eligible for listing on the National Register of Historic Places. This alternative includes large tracts of lands with historic and

cultural landscapes that have long been recognized but have only recently been documented through ongoing research.

This alternative has large tracts of National Conservation Lands with Native American values including sacred sites, places of religious and ceremonial importance, and areas of traditional use and gathering for the Kawaiisu, Tubatalabal, Chemehuevi, Timbisha-Shoshone, Panamint Shoshone and Owens Valley Paiute-Shoshone. Resource values that have been identified as having particular significance to these cultural groups include those near Owens Dry Lake and Haiwee Reservoir.

Scientific Values

Sensitive terrestrial and aquatic species, many of them endemic to this subarea, and prehistoric and historic cultural resources, are the focus of numerous scientific studies on the National Conservation Lands in this alternative.

Scientific studies are ongoing in core population areas of the Mohave ground squirrel. The Townsend's big-eared bat is the focus of several studies, as populations of this species are steeply declining; research on maternity colonies has recently been conducted in the White-Inyo Range. California voles have been the subject of surveys in eastern Sierra canyons.

PRBO Conservation Science collects data on migratory birds that use the Pacific migratory bird flyway along the east side of the Sierra Nevada. Researchers are studying Golden Eagles to better understand their home ranges and migratory movements in the southern Sierra front country. Studies also address the Inyo California Towhee.

Researchers are studying the biodiversity of aquatic invertebrates in the Argus Range. Others conduct research on halophytic microbes and viruses in the saline wetlands of the Panamint Lake area. Studies of Joshua trees have been conducted in Fish Lake Valley at the northern extent of their range.

National Conservation Lands in this alternative provide outstanding examples of cultural resource properties with extensive scientific values. Previously excavated sites in the region have stratigraphic sequences of projectile points associated with radiocarbon dates that serve as the basis for the cultural chronology used by archaeologists throughout the region and state today. Archaeological, cultural, and historic research being conducted on these lands is contributing greatly to understanding human adaptation in a wide range of ecological zones; landscape use and mobility by prehistoric and historic people; and the diversity and interaction spheres of cultural groups in this and surrounding regions.

The Trona Pinnacles were designated by as a National Natural Landmark in 1968 to protect one of the nation's best examples of tufa formation. This unique landscape consists of more than 500 tufa (calcium carbonate) pinnacles rising from the bed of the Searles Dry Lake basin. The tufa spires, some as high as 140 feet, were formed underwater 10,000 to 100,000 years ago when Searles Lake was a link in an interconnected chain of Pleistocene lakes stretching from Mono Lake to Death Valley. Tufa is a porous rock formed as a deposit when springs interact with other bodies of water. As rare geologic features, they offer excellent opportunities for scientific research.

Acreage

This alternative would include approximately 377,000 acres of National Conservation Lands in the Basin and Range subarea in the Preferred Alternative.

Coachella Valley

Background Information

The Coachella Valley forms the north half of the Salton Sea Trough, the large basin for ancient Lake Cahuilla. The valley extends northwest to southeast for approximately 45 miles from the southeast San Bernardino Mountains to the Salton Sea, the largest lake in California, and is about 15 miles wide along most of its length. The broad, low-lying valley floor, featuring the Coachella Dunes, comprises the westernmost limits of the Sonoran Desert at the Santa Rosa and San Jacinto mountains. Other mountain ranges bounding the valley are the Little San Bernardino Mountains to the north and the Chocolate Mountains on the east.

Watersheds from the mountain ranges drain into the Salton Sea. The San Andreas Fault crosses the valley from the Chocolate Mountains in the southeast corner and along the centerline of the Little San Bernardino Mountains. Along the San Andreas Fault and subsidiary faults, desert palm oases appear where tectonic movements allow artesian water to surface from deep in the earth.

The Coachella Valley is a major point of entry into the California desert for visitors from the Los Angeles and Riverside-Ontario-San Bernardino metropolitan areas, and many visitors from elsewhere in the United States and from Canada come in the winter for sun, warmth, and recreation. By far the most populous subarea in the Plan Area and one of the fastest growing regions in Riverside County, the valley expects to add 500,000 people over the next 10 years. Wind energy production is an important commercial enterprise in San Gorgonio Pass, one of the earliest wind farms established in the United States. The mostly urbanized valley floor, and the orderly rows of industrial wind turbines in the pass, contrast strikingly with the abrupt steep slopes of the rugged mountain ranges.

Existing BLM National Conservation Lands play an important conservation role in the subarea. Since they are already managed by the BLM or other federal and state agencies for conservation purposes, they are not subject to the alternatives under this plan. All or portions of the following BLM Wilderness Areas are within the subarea: San Gorgonio, Santa Rosa, Mecca Hills and Orocopia Mountains. This subarea also includes the Santa Rosa and San Jacinto Mountains National Monument, the Big Morongo Preserve, and the Coachella Valley Fringe-toed Lizard Preserve.

The following areas are not managed by the BLM, and are not part of the plan alternatives but contribute to the habitat conservation goals of the DRECP: Joshua Tree National Park, Coachella Valley National Wildlife Refuge, Mount San Jacinto State Park, Salton Sea State Recreation Area, Indio Hills State Park, Hidden Palms Ecological Reserve, Magnesia Springs Ecological Reserve, Oasis Springs Ecological Reserve, University of California Deep Canyon Desert Research Center, University of California Oasis de los Osos, Indian Canyons and Whitewater Canyon Preserve.

Alternative Description

Ecological Values

The National Conservation Lands under this alternative would conserve species indigenous to the Coachella Valley that have special status under either the federal or California Endangered Species Act, or that have been proposed or are candidates for federal listing. The diverse desert landscape of the Coachella Valley provides habitat for dozens of plant and animal species, some found nowhere else in the world. The rich endemic flora includes the endangered Coachella Valley milk-vetch at the Coachella Valley Preserve ACEC, and endangered triple-ribbed milk-vetch at Whitewater Canyon ACEC. The California Native Plant Society lists more than 120 rare plants from the Coachella Valley, an indication of the many distinct habitats that occur in the subarea. The BLM has designated 14 plants as special status species, several of which are found only in the Coachella Valley subarea, including the Mecca aster and Orocopia sage found in designated wilderness and in the Chuckwalla ACEC.

Native animals such as the desert pupfish and Yuma Clapper Rail at Dos Palmas ACEC, and the peninsular population of desert bighorn sheep in the Santa Rosa and San Jacinto National Monument, are also federally listed Endangered species. The Agassiz's desert tortoise in Chuckwalla ACEC, and the Coachella Valley fringe-toed lizard in Coachella Valley ACEC, are listed as Threatened. Remaining dune ecosystems in the north end of the valley provide habitat for the lizard and other endemic plants and animals. These vital wildlife habitats are encompassed in National Conservation Lands under the Preferred Alternative.

Also included is Big Morongo Canyon Preserve, one of the most important birding areas in California with over 250 recorded bird species and 72 resident breeding species. Nestled among the Little San Bernardino Mountains, the canyon is one of the 10 largest cottonwood and willow riparian habitats in California. Its upstream end lies in the Mojave Desert; downstream, it opens into the Sonoran Desert. The Morongo Fault running through the canyon causes water draining from the surrounding mountains to form Big Morongo Creek, marsh habitat and mesquite thicket. This diverse landscape has been an important part of the Morongo Basin's natural and cultural history.

Whitewater Canyon is included as National Conservation Lands because it is a unique transitional ecotone where three ecoregions converge: Mojave Desert, Sonoran Desert, and California Coast. The canyon supports dense riparian habitat for endangered, threatened, and sensitive species of flora and fauna. The San Andreas Fault slices across the ancient river and the tectonic plates create an underground dam in the Earth's crust between ten and 60 miles deep at Bonnie Bell, where the river backs up as a massive underground lake. This has created a natural wildlife sanctuary with hundreds of rare old growth Fremont cottonwood trees in a rich riparian habitat, affording an abundance of food, water, shelter and critical habitat for two endangered bird species, Southwest Willow Flycatcher and Least Bell's Vireo. The canyon has robust populations of desert bighorn sheep, mule deer and black bear and is an important wildlife corridor between the San Bernardino and San Jacinto Mountains. The Big Morongo Canyon Preserve is a Watchable Wildlife site and serves the community as an important site for youth and environmental education programs.

Dos Palmas Preserve has another of the rare riparian areas in the subarea, with extensive palm oases. The site is managed to protect endangered desert pupfish and Yuma Clapper Rail and other sensitive species as part of mitigation efforts for the Coachella Canal. This preserve is included in National Conservation Lands in this alternative.

Also included is are portions of the Coachella Valley Preserve, the umbrella designation for a large contiguous complex which includes the Coachella Valley National Wildlife Refuge, the BLM Willow Hole/Edom Hill ACEC, Indio Hills State Park, and Coachella Valley State Ecological Reserve. It has critical habitat for the threatened Coachella Valley fringe-toed lizard and the endangered Coachella Valley milk-vetch, and holds most of the remaining Coachella Dunes, the essential sand source for the habitat of these two species.

The alternative's National Conservation Lands in the mountain ranges on the north, in Whitewater Canyon ACEC and Big Morongo ACEC, encompass a major transition zone between the Colorado/Sonoran Desert to the south and the Mojave Desert to the north. These include a long band of wildlife habitat connectivity extending from the Mecca

Hills and Orocopia Mountains Wilderness Areas north to the southern boundary of Joshua Tree National Park.

Cultural Values

Native American settlements, trails, and traditional plant gathering sites, along with historic structures and other sites used during early European American settlement, are found throughout the subarea. Cultural resources encompassed by National Conservation Lands in this alternative include many significant cultural sites which document the lives of prehistoric and historic peoples.

Archaeological research has shown that humans have occupied sites at Whitewater Canyon, Snow Creek, Indian Canyons and other sites represented by proposed National Conservation Lands in the Coachella Valley for at least 3,000 years. Ancestors of the Agua Caliente Band of Cahuilla Indians settled here centuries ago and developed complex communities at many sites including Palm, Murray, Andreas, Tahquitz, Snow Creek, Whitewater and Chino Canyons. There are many sacred sites and landscape features of great importance to Cahuilla culture. Cahuilla villages were generally located in or near the mouth of canyons in the subarea, and in some instances there were both summer villages at higher elevations and winter villages closer to the valley floor. Many prehistoric cultural sites are in the Santa Rosa and San Jacinto mountains, with others in the valley. Tangible evidence includes ancient trails; traditional mortars and pestles; rock art; and occupation, village and gathering sites. Several sites are listed or nominated for the National Register of Historic Places.

At Dos Palmas Preserve on the shoreline of ancient Lake Cahuilla, native peoples settled and drew on the food resources from the lake. The Preserve has important cultural resources at the sites of former settlements. These are included in National Conservation Lands under this alternative.

Recognition as National Conservation Lands will contribute greatly to cooperative management of Coachella Valley's rich cultural resources undertaken jointly by the BLM and the Agua Caliente Band of Cahuilla Indians, Morongo Band of Mission Indians, and Torres-Martinez Band of Desert Cahuilla Indians.

Scientific Values

This alternative's National Conservation Lands in the Coachella Valley subarea have high scientific and research values. Studies currently underway address many species of plants and animals that are threatened or facing extinction, including the Coachella Valley fringe-toed lizard, Peninsular bighorn sheep, desert pupfish and Agassiz's desert tortoise. These

studies provide a wealth of knowledge on the health of the species' populations, their habitats, and landscape-scale ecosystems upon which they depend.

Further studies of groundwater and climate change history are needed to guide future management of the Coachella Valley. Opportunities such as those at Dos Palmas abound for advancing the technologies to efficiently restore and enhance disturbed desert habitats so that they continue to benefit wildlife and to counteract adverse impacts from climate change. The pool of scientific expertise in local Coachella Valley communities, the University of California system, and adjacent metropolitan areas can forge new understanding of sustainable ecosystems and human communities in a hot desert ecosystem. Opportunities for joint landscape research with Joshua Tree National Park concerning the function of habitat connectivity between the Mojave and Sonoran deserts as climate change progresses will inform scientists and managers as they refine conservation planning.

The Coachella Valley has very high seismic activity due to the San Andreas and San Jacinto Faults and proximity of two tectonic plates, and is likely to again be the epicenter of devastating earthquakes. Studies of earth movements are critical. Fault zones run through the Mecca Hills Wilderness and the Coachella Valley Preserve.

Archaeological and cultural research examines humans' ways of adapting to this arid environment, and contributes to better understanding of diverse cultures.

Acreage

This alternative would include 72,347 acres of National Conservation Lands in the Coachella Valley subarea in the Preferred Alternative.

Colorado Desert

Background Information

The Colorado Desert is the western extension of the Sonoran Desert, hotter and drier than parts to the east. Bounded on the east by the Colorado River, it reaches across southeastern California to meet the transition zone with the Mojave Desert in the northwest. Watersheds from several mountain ranges drain into the Colorado River. Diverse, intact habitats in this subarea include upland shrub scrub dominated by creosote, saltbush species, brittle bush, cacti, and ephedra. Dunes such as the Palen Dunes, Rice Dunes, and Chuckwalla Dunes provide habitat for sand-dependent plant species. Subsurface moisture in desert washes supports stands of microphyll woodlands with old-growth stands of blue paloverde and ironwood. Springs provide the only permanent water sources in the subarea away from the Colorado River. Wildlife species found in many parts of the subarea include mule deer,

bobcat, kit fox, desert kangaroo rat, cactus mouse, black-tailed jackrabbit, Gambel's Quail, American badger, and desert bighorn sheep.

Existing BLM National Conservation Lands play an important conservation role in the subarea. These lands have been designated by Congress for conservation purposes, and they are not subject to the alternatives under this plan. These lands include all or parts of Sheephole Valley, Cadiz Dunes, Old Woman Mountains, Turtle Mountains, Palen-McCoy, Big Maria Mountains, Rice Valley, Riverside Mountains, Chuckwalla Mountains, Indian Pass, Little Chuckwalla Mountains, Little Picacho, Palo Verde Mountains, and Picacho Peak Wilderness Areas. The Congressionally designated Desert Lily Sanctuary is also within the subarea.

The following areas are not managed by the BLM and are not part of the plan alternatives but contribute to the habitat conservation goals of the DRECP: Joshua Tree National Park, Cibola National Wildlife Refuge, Imperial National Wildlife Refuge; Picacho State Recreation Area.

Alternative Description

Ecological Values

National Conservation Lands in this alternative include critical habitat for Agassiz's desert tortoise, a federally listed Threatened species, and habitat for 60 other special status plants and animals. This alternative also encompasses important habitat for desert bighorn sheep, an iconic species with declining numbers, such as habitat for the Chuckwalla and Palo Verde Mountain bighorn sheep herds. The National Conservation Lands would incorporate important linkages among 14 BLM Wilderness Areas from the Colorado River to Joshua Tree National Park, providing desert habitat connectivity for terrestrial reptiles, mammals and Burrowing Owls.

Mountain cliff sites in designated BLM Wilderness Areas in this subarea are important to maintaining robust Golden Eagle populations. The chain of Wilderness Areas lining the Colorado River, together with the linkages included in the National Conservation Lands in this alternative, provide habitat continuity for eagle foraging.

National Conservation Lands in this alternative would include important Sonoran Desert microphyll woodlands. Old-growth microphyll woodlands provide the highest amount of aboveground biomass of any plant community in the Sonoran Desert outside of the Colorado River riparian zone and constitute a reservoir for carbon sequestration. The complex physical structure and cover of the woodlands provide essential habitat for neotropical migratory birds crossing the California deserts to reach nesting sites in the Pacific Coast states and Alaska.

BLM special status or sensitive species found in the National Conservation Lands in this alternative include desert bighorn sheep, mountain lion ("Yuma puma"), seven species of bats, Colorado Valley woodrat, wintering mountain plover, several rare raptor and owl species, seven other bird species, six reptile species, Couch's spadefoot toad, and 32 special status plant species. Rare plant species include chaparral sand-verbena (*Abronia villosa* var. *aurita*), Emory's crucifixion thorn (*Castela emoryi*), Harwood's eriastrum (*Eriastrum harwoodii*), and Munz's cholla (*Cylindropuntia munzii*).

Also included in National Conservation Lands is the Chuckwalla ACEC. The Chuckwalla Bench, a scenic plateau within the ACEC, consists of bajadas, sandy washes and desert pavement located between the Chuckwalla Mountains and the Chocolate Mountains Aerial Gunnery Range. This area is one of the best examples in California of diverse Sonoran Desert plant communities that include creosote, ocotillo, and nine species of cacti. The Chuckwalla ACEC is also critical habitat for the desert tortoise.

Wetlands along the Colorado River (adjacent to the subarea) and ephemerally flowing riparian areas at Corn Springs and Milpitas Wash are important habitats for many BLM special status species, such as Gila Woodpecker and Lucy's Warbler, and provide essential stopover habitat for migratory birds.

The Lower Colorado River corridor has the highest biological diversity of bat species in the western United States. Natural caves and abandoned mine sites located in and near the Little Picacho, Palo Verde, Picacho Peak, and Riverside Mountains Wildernesses provide vital habitat for rare bat species of management concern, including California leaf-nosed bat and pallid bat. All of these species have habitat encompassed by National Conservation Lands under this alternative.

This alternative includes some of the dune habitats at Palen Lake and the southernmost extremes of Pinto Wash system, which provide habitat for Mojave fringe-toed lizard and for additional rare plants dependent on dunes and sandy soils: Harwood's milk-vetch and Palmer's jackass clover.

Cultural Values

Important prehistoric and traditional cultural sites are abundant in this subarea, and National Conservation Lands in this alternative would include well-known sites such as Alligator Rock, Corn Springs, Mule Mountains, and the Indian Pass Area of Traditional Cultural Concern. The Quechan, Mojave, Paiute, and many other Indian tribes and groups have lived in this area for thousands of years. Most landscapes found in these National Conservation Lands have special cultural significance to these people. Tangible evidence includes ancient trails, geoglyphs, rock art, occupation and village sites and burial sites. Several sites located within these National Conservation Lands are listed or nominated for

the National Register of Historic Places, including Corn Springs and Mule Mountains. Hundreds of other sites that have not yet been recorded are likely to be found throughout the National Conservation Lands.

Alligator Rock, Corn Springs, Mule Mountains, and Indian Pass all include rock art sites, and have high cultural significance. Corn Spring was a prehistoric occupation site, and the other three are particularly known for their ancient trails and for their spiritual values. Mule Mountains also has unusual historic features associated with the World War II Desert Training Center.

The Historic Bradshaw Trail, traversing this alternative's National Conservation Lands, was established to link the Arizona gold mine camps at La Paz (Ehrenberg) with Los Angeles in the 1860s. Stage stations were set up along the route. Beginning at Dos Palmas in Riverside County, near the Salton Sea, the trail crossed Chuckwalla Valley en route to Bradshaw's Ferry on the Colorado River and on to La Paz. Today, a remnant 65-mile section of the Bradshaw Trail extends from North Shore to Palo Verde near Blythe, California. This historic trail offers spectacular views of the Chuckwalla Bench, Orocopia Mountains, Chuckwalla Mountains, and the Palo Verde Valley, and is a remnant of a formative period in the history of the desert Southwest. The BLM designated the route as a National Back Country Byway in 1992.

Most of the subarea was part of the World War II Desert Training Center, also known as the California-Arizona Maneuver Area. From 1942 to 1944, the deserts of Southern California and Arizona became a center for the largest military combat training exercise of its time. Close to a million American soldiers cycled through a series of twelve primitive base camps —collectively known as Patton Camps—from which they conducted large-scale military maneuvers. Remnants of many of the camps, including Iron Mountain Divisional Camp, Granite Divisional Camp, Camp Clipper, Camp Coxcomb, Camp Young Divisional Camp, and Rice Army Airfield, are encompassed by National Conservation Lands in this alternative. Artifacts from camp activities include rock alignments marking camp roads and walkways, rock designs of insignias and symbols, and remnants of communication wire, batteries and other items. Of particular interest are the topographic relief map and outdoor chapel at the Iron Mountain Divisional Camp.

Outstanding scenic values are also among the cultural values represented by National Conservation Lands in this alternative. These are particularly recognized at McCoy Valley and northern Palen Valley.

Scientific Values

The desert tortoise and other threatened, endangered and endemic species, Unusual Plant Assemblages, complex hydrology, and prehistoric and historic resources are the focus of numerous scientific studies on National Conservation Lands in this alternative.

Largely due to the floristic richness of the National Conservation Lands in this alternative and their importance for the recovery and conservation of Agassiz's desert tortoise, ecological research values are high. Ongoing studies of desert tortoise in the Chuckwalla Bench and desert bighorn sheep in the Chuckwalla and Little Chuckwalla Mountains Wildernesses are providing important scientific information. Other special status plants and animals offer research opportunities and would provide a wealth of knowledge on the health of populations of these species, their habitats, and landscape-scale ecosystems upon which they depend.

The Chuckwalla Bench is also the site of many botanical studies, because its flora, with 158 native species, is one of the richest in the Colorado Desert subarea. The Chuckwalla Bench area encompasses nearly all the Chuckwalla-Milpitas Wash watershed, which has the largest extant microphyll woodland in the U.S. portion of the Sonoran Desert.

The BLM-managed Wilderness Areas from Little Picacho to the Chuckwalla Mountains and north to the Palen-McCoy Wilderness form a contiguous landscape traversed by a few paved roads and OHV routes. Landscape continuity encompassed by the National Conservation Lands in this alternative provides an important setting for documenting the impacts, habitat shifts, and changes to biological diversity occasioned by climate change.

Studies of groundwater and climate change are needed to guide future management of important plant and animal habitats on National Conservation Lands in this alternative. Changes to hydrology due to changes in climate and weather pattern may alter, positively or negatively, the water cycle in the watershed. Already a focus of long-term research for desert tortoise conservation and recovery, this watershed deserves closer study to inform scientists and managers of new ways to manage desert water supplies under changing climate conditions.

The National Conservation Lands in this alternative have very high seismic activity due to the proximity of two tectonic plates, so studies of earthquakes and earth movement are also critical.

Archaeological and cultural research examines the adaptation of humans in this arid environment, and contributes to better understanding of diverse cultures. The abundant and significant cultural resources encompassed by National Conservation Lands in this

alternative include archaeological sites with important information values that could contribute to our understanding and knowledge of the past.

Acreage

This alternative would include approximately 768,000 acres of National Conservation Lands in the Colorado Desert subarea in the Preferred Alternative.

Kingston-Amargosa

Background Information

The Kingston-Amargosa subarea is marked by permanent flowing water and wetlands within one of the driest desert areas on the continent. It includes a broad range of habitat types supporting diverse plant and wildlife species including many special status species; and several narrowly endemic species, some of which may be new to science. Public lands provide critical habitat connections between a number of designated BLM Wilderness Areas such as the Kingston Range, Nopah Range and Funeral Mountains, as well as Death Valley National Park and the Mojave National Preserve.

The subarea includes some of the most intact viewsheds in the California desert. preserving the historical integrity of tribally significant landscapes, and cultural landscapes associated with the Old Spanish National Historic Trail.

Nationally significant paleontological resources in the subarea include the Mountain Pass dinosaur track way, the only known occurrence of fossilized Mesozoic reptile tracks in California and a rare occurrence in the United States. Mountain Pass was designated for protection by Congress and is included in National Conservation Lands under all alternatives.

Existing BLM National Conservation Lands play an important conservation role in the subarea. They have already been designated by Congress for conservation purposes, and they are not subject to the alternatives under this plan. All or portions of the following Wilderness Areas are within the subarea: Kingston Range, Nopah Range, Resting Spring Range, Funeral Mountains, Mesquite, Stateline, North Mesquite, Pahrump Valley, Ibex and South Nopah Range Wilderness. Other National Conservation Lands include the foreground viewshed of the Old Spanish National Historic Trail and the Amargosa Wild and Scenic River.

These areas are not managed by the BLM and are not part of the plan alternatives but contribute to the habitat conservation goals of the DRECP: Death Valley National Park and the Mojave National Preserve.

Alternative Description

Ecological Values

This alternative would include as National Conservation Lands the most important wildlife linkages and critical habitat in the subarea, and other lands with ecological sensitivity and natural integrity. These include critical linkages between Wilderness Areas and National Park units and intact landscapes between these large conservation areas. The linkages for wildlife migration are critical to the conservation of species in the East Mojave region, based on their geologic and topographic variability. The migration linkages support both biodiversity and opportunities for adaptation to climate change. Linkages are particularly important for sustaining the genetic integrity for the federally listed Threatened desert tortoise in the southern portion and a significant amount of suitable, intact habitat for desert bighorn sheep, a BLM Sensitive species, especially in the Shadow Valley and Silurian Valley areas.

Ground and surface water from the surrounding mountains flow into the Amargosa Wild and Scenic River, which supports the endemic Amargosa pupfish and Amargosa Canyon speckled dace, as well as endemic species of spring snails. Known as the "Jewel of the Mojave," the Amargosa drains into Badwater in Death Valley, the lowest point in the Western Hemisphere, and supports habitat for the Death Valley pupfish. The Amargosa River corridor boasts riparian communities that include riparian gallaries of mesquite bosque and cottonwood; and an exceptionally rich bird life including Western Least Bitterns, Northern Harriers and Snowy Plovers, leading to its national recognition as an Important Bird Area. This area is home to the only population of the federally listed Endangered Amargosa vole; the vole's entire range is included in this alternative's National Conservation Lands

This alternative would also include the northern segment of the Amargosa River and its populations of the federally listed Endangered Amargosa niterwort in National Conservation Lands.

The Shoshone Caves, near the town of Shoshone, support a unique assemblage of endemic invertebrates. The caves are included in National Conservation Lands under all alternatives.

Cultural Values

This alternative would include a diversity of nationally significant archaeological and historic sites within National Conservation Lands. Evidence of the earliest inhabitants includes rock art sites, a prehistoric turquoise mine, flakestone quarries, prehistoric and historic trail systems, rock alignments, sleeping rings and other sites that are associated

with successful long-term human occupation of one of the harshest environments in the United States. Sites in the Shadow Valley and Silurian Valley areas are of particular importance. Historic mining areas in both valleys are also included.

Scientific Values

Unique habitat, endemic species and complex hydrology offer many opportunities for scientific research on the National Conservation Lands in this alternative. The endemic Amargosa vole is the subject of long-term demographic, disease and genetics research and offers scientists a unique opportunity to study a relict species from wetter climate periods. The area is currently the focus of validation studies to describe new species including a number of new insects in the Shoshone Caves, as well as the Shoshone whip-scorpion that has not been confirmed for the last 30 years. Other potential species new to science include endemic spring snails in seeps and springs. These lands are also the focus of long-term studies examining the success of habitat restoration for songbirds, including the federally listed Bell's vireo and southwestern willow flycatcher.

Acreage

This alternative would include approximately 433,000 acres of National Conservation Lands in the Kingston-Amargosa subarea in the Preferred Alternative.

Lake Cahuilla

Background Information

The Lake Cahuilla subarea includes a picturesque mix of scenic physical features surrounding the Imperial Valley. This valley, which is the site of ancient Lake Cahuilla and now includes the Salton Sea, is one of the lowest on Earth. Sonoran Desert habitats share the valley with agricultural, urban and other private lands that are mostly below sea level and bounded by canals that divert Colorado River water from the All-American Canal along the US-Mexico border. Forty feet above sea level is the ancient Lake Cahuilla shoreline, which marks the transition to the natural landforms and landscapes of the valley. The public lands surrounding the basin are characterized by rugged desert mountains, visible remnant shorelines of ancient Lake Cahuilla, and the Coyote Mountains and Yuha Desert with their eroded mudhills and extensive marine fossil deposits.

Low elevation sand hills are habitat for the flat-tailed horned lizard, a BLM sensitive species with an active conservation plan. From the southeastern edge of the ancient lakeshore the rolling sand hills increase in elevation through the East Mesa, culminating in the high Imperial Sand Dunes, also known as the Algodones Dunes. Yet further to the east

are the rugged peaks of the Cargo Muchacho and Chocolate Mountains, and the Little Picacho, Picacho Peak, and Indian Pass Wilderness Areas, of the Colorado Desert subarea.

The western side of the Imperial Valley is dominated by the Peninsular Mountain Ranges rising steeply from the desert and providing habitat (including designated critical habitat) for the federally listed Endangered Peninsular bighorn sheep.

Existing BLM National Conservation Lands play an important conservation role in the subarea. They have already been designated by Congress for conservation purposes, and they are not subject to the alternatives under this plan. This subarea includes the following Wilderness: Fish Creek Mountains, Coyote Mountains, Jacumba, North Algodones Dunes, Little Picacho (small portion), Picacho (small portion); and the Juan Bautista de Anza National Historic Trail.

These areas are not managed by the BLM and are not part of the plan alternatives but contribute to the habitat conservation goals of the DRECP: Sonny Bono/Salton Sea National Wildlife Refuge; Imperial State Wildlife Area; Anza-Borrego Desert State Park, including State Wilderness; and the Salton Sea State Recreation Area.

Alternative Description

Ecological Values

The Lake Cahuilla subarea is characterized by extremes in elevation, rainfall, and land uses. The Imperial Valley is also the boundary between two tectonic plates, causing a jumble of diverse geology and soils, which results in a very high level of endemic and rare species and habitats. Three Unusual Plant Assemblages would be included in the National Conservation Lands under this alternative: Mesquite Thickets, Yuha Desert Crucifixion Thorn, and Munz Cholla.

San Sebastian Marsh and San Felipe Creek, included in the National Conservation Lands in this alternative, represent rare occurrences of marsh and perennial stream habitat in a desert environment. The area is designated as an Unusual Plant Assemblage under Mesquite Thickets and other plant assemblages associated with water. The marsh and creek are the only designated critical habitat for the federally listed Endangered desert pupfish in California. The lowland leopard frog may also still occur in San Felipe Creek, which includes a proposed reintroduction site at its only known former breeding location. The flat-tailed horned lizard also occurs here. National Conservation Lands in this alternative would link the existing ACEC to existing and proposed conservation lands and ACECs to the south and west, including the Fish Creek Mountains Wilderness, Anza-Borrego Desert State Park, and West Mesa ACEC.

The West Mesa conservation lands are contiguous with San Sebastian Marsh/San Felipe Creek. The West Mesa is a transition between the Imperial Valley floor and the Peninsular Ranges. The area is habitat for the flat-tailed horned lizard, a BLM and California special status species and a covered species under the Lower Colorado River Multi-Species Conservation Program (LCRMSCP). National Conservation Lands in this alternative would include the lands identified for recovery of the species within the LCRMSCP, and encompass landscape-level habitat values by connecting to the Fish Creek Mountains Wilderness and Anza-Borrego Desert State Park. West Mesa also supports Colorado Desert fringe-toed lizard and bighorn sheep.

Habitat for the flat-tailed horned lizard and other sensitive species is also found in this alternative's National Conservation Lands in the Yuha Desert, along with important plant communities including Yuha Desert Crucifixion Thorn Unusual Plant Assemblage; and the Ocotillo ACEC, together with rare California fan palms and an important corridor for Peninsular bighorn sheep linking the Yuha Basin, Jacumba Wilderness and Anza-Borrego Desert State Park.

Under this alternative, National Conservation Lands on the east side of the Imperial Valley would cover the Chocolate and Cargo Muchacho mountains; the low sand hills of the East Mesa bordering the Imperial Sand Dunes; and the best examples of the Lake Cahuilla shoreline. Lake Cahuilla shoreline lands on both the west and east sides of the valley include widely distributed flat-tailed horned lizard habitat. The East Mesa area, strategically essential to the LCRMSCP, has the largest contiguous area of the flat-tailed horned lizard's range with the highest relative abundance of flat-tailed horned lizard not undergoing significant surface disturbance. The East Mesa Expansion National Conservation Lands would link the existing East Mesa ACEC with the remainder of the LCRMSCP essential habitat to the north. An additional block of land separated from the larger unit by Interstate 8 and the All American Canal would also be included as National Conservation Lands.

Bordering the Imperial Sand Dunes on the east are proposed National Conservation Lands that would be part of a large contiguous unit creating an unbroken arc of specially designated landscapes from the lower Colorado River to Joshua Tree National Park and the Mojave Desert. These would include intact wildlife corridors extending well beyond this subarea, stretching from the Sonoran Desert to the highest elevations of the Little San Bernardino Mountains and beyond. Important habitat types encompassed include microphyll woodlands, hotspots of biodiversity in the desert, and habitat for special status or BLM sensitive species: Agassiz's desert tortoise, desert bighorn sheep, mountain lion ("Yuma puma"), seven species of bats, Colorado Valley woodrat, Mountain Plover, several raptor and owl species, seven other bird species, six reptile species, Couch's spadefoot toad, and 32 special status plant species. Natural communities include Sonoran Desert scrub,

Mojave Desert scrub, desert dry wash woodland, playas, sand dunes, and desert washes. Desert pavement and biological soil crusts are important soil resources.

Cultural Values

The Lake Cahuilla subarea is culturally important in California history and to Native American tribes of the region. Because the ancient lake once filled the valley, widely distributed parcels of National Conservation Lands in this alternative include segments of the ancient Lake Cahuilla lakeshore on both the west and east sides of the valley, with extensive cultural resources from thousands of years of human occupation. In addition to shoreline occupation sites and traditional uses, these areas includes trails, rock art, ceremonial sites and burials. The Kumeyaay, Quechan, Mojave, Paiute, and many other far ranging Indian tribes and groups have lived in the region for generations and most of the landscapes found in this subarea have special cultural significance to these peoples. The National Conservation Lands in this alternative encompass several sites that are listed in, nominated for listing, or eligible for listing in the National Register of Historic Places, including San Sebastian Marsh, most of Yuha Basin, Singer Geoglyphs, Pilot Knob, and others such as the Ocotillo area where sites ranging from ancient to recent are set in a spectacularly scenic ethnographic landscape of traditional significance to many local tribes. While these sites have been identified, are designated as ACECs and receive public visitation, hundreds or even thousands of unknown sites are likely located throughout the unit.

Many important events in European and American history occurred in this subarea. The Juan Bautista de Anza National Historic Trail commemorates the epic expedition of the 1770s that helped colonize Upper California; the unaltered landscapes of the trail route are among the last in California that give visitors a sense of the colonists' accomplishment. The National Conservation Lands in this alternative include segments of the trail at San Sebastian Marsh, Yuha Basin, and connecting Fish Springs to Anza-Borrego Desert State Park, along with well-known camp sites of the Anza expedition at San Sebastian Marsh and Yuha Well.

In the Yuha Basin, this alternative also includes portions of the Southern Immigrant Trail/Butterfield Overland Stage Route, which was the main road into California during the mid-19th century. Thousands of soldiers, traders, settlers, and gold seekers crossed the southwest on this trail, particularly during the California Gold Rush. Many sections of the original trail and much of the historic landscape still exist and the route is being studied by the National Park Service for potential designation as a National Historic Trail. If the National Park Service study recommends the trail as "suitable" for congressional designation as a National Historic Trail, Congress may act a second time to designate the

trail. If designated by Congress, the National Trails System Act Section 5(a) is amended, adding the trail as a component of the National Trails System.

Also included in this alternative as National Conservation Lands are the gold mines and ghost town of Tumco in the Cargo Muchacho Mountains, representing the early 20th century mining history of the United States. Tumco is a popular visitor destination with many photogenic ruins. The entire subarea was also part of the World War II Desert Training Center, although most vestiges of the training camps have been vandalized or removed; none of the training camps are included in this alternative.

Scientific Values

Due to the importance of this area for the recovery and conservation of so many species, ecological research values are high. Because of the extensive habitat linkage, National Conservation Lands in this alternative offer unparalleled opportunities to study wildlife movement and connections between diverse habitats. Ongoing studies of desert tortoise, bighorn sheep, and other special status plants and animals provide a wealth of knowledge on the health of these species, habitats, and ecosystems.

Studies of groundwater and climate change affecting conservation lands are needed to help guide future management. The area has very high seismic activity due to the proximity of two tectonic plates, so studies of earthquake and earth movements are critical.

Archaeological and cultural research about the adaptation of humans in this arid environment contributes to better understanding of diverse cultures. Since the area is rich in cultural resources, National Conservation Lands proposed in this alternative include lands that are important to cooperative study, management and preservation of these resources by the BLM and Native American tribes. Many of the prehistoric archaeological sites have been listed, nominated, or are eligible for listing in the National Register of Historic Places due to their scientific research values and potential.

National Conservation Lands in this alternative also offer opportunities for paleontological research. The Yuha Basin, well known for fossil deposits, is composed of eroded badlands with portions of the Imperial Formation exposing ancient oyster shell beds and other marine fossils.

The cultural and paleontological resources discovered and studied within this unit are often associated with nationally known scientists, such as archaeologist Malcolm Rogers, and institutions including the San Diego Natural History Museum and the San Diego Museum of Man.

Acreage

This alternative would include approximately 428,000 acres of National Conservation Lands in the Lake Cahuilla subarea in the Preferred Alternative.

Mojave and Silurian Valley

Background Information

The Mojave and Silurian Valley subarea lies within the east and central Mojave Desert, with Barstow just outside its southwest corner; from there it extends beyond Soda Lake in the east and the Salt Creek Hills to the northeast. It includes the alluvial plain of the Silurian Valley, from where the Amargosa River drains it on the north, south to the South Avawatz Mountains. Water and wind erosion, and the subsequent deposition of sediments across the landscape, strongly shape the major landforms: very gently to moderately sloping alluvial fans and nearly level basin floors, with a few protruding hills. The broad valley floors have areas of sand dunes, some steeply sloping; and dry lake beds, with large playas at Soda Lake, Silver Lake, and Silurian Lake. Scattered, isolated mountain blocks are mostly less than 1,000 feet in elevation but range to over 5,250 feet.

Springs and perennial water sources are uncommon. Mean annual precipitation is about 4 to 6 inches, nearly all falling as rain during the cool winter months. Summer temperatures often exceed 100°F. The timing of spring plant growth varies with temperatures and the quantity and intensity of precipitation, bringing a wide variety of annual wildflowers in good rainfall years. The most widespread vegetation community is creosote bush scrub. Other common plant communities include saltbush on basin floors, iodine bush and saltgrass on wet basin-fill and lacustrine deposits, and desert sand-verbena on stabilized dunes.

Existing BLM National Conservation Lands play an important conservation role in the subarea. They have already been designated by Congress for conservation purposes, and they are not subject to the alternatives under this plan. All or portions of the following are within the subarea: Black Mountains, Golden Valley, Grass Valley, Hollow Hills, Kingston Range, Newberry Mountains and Rodman Mountain Wildernesses; and Avawatz Mountains, Cady Mountains, Soda Mountains, and South Avawatz Mountains Wilderness Study Areas.

The Mojave National Preserve is not managed by the BLM and is not part of the Plan alternatives, but contributes to the habitat conservation goals of the DRECP.

Alternative Description

Ecological Values

National Conservation Lands in this alternative include critical habitat for Agassiz's desert tortoise in six dispersed parts of the Superior-Cronese ACEC. The public lands that surround the Black Mountain Wilderness and lie within the Superior-Cronese ACEC have critical habitat for desert tortoise, a federally listed Threatened species; and known habitat for Mohave ground squirrel, LeConte's thrasher, and Barstow woolly sunflower. The Superior-Cronese area includes the largest of only eight known population of Parish's phacelia, most of which have not been located since pre-1980. These lands are foraging habitat for golden eagles and prairie falcons nesting nearby. Parts of the adjacent Fremont-Cramer ACEC that lie within this subarea have the same ecological values and are also included.

Desert tortoise habitat at the north end of the Ord-Rodman ACEC is also included in this alternative's National Conservation Lands, along with important habitat for the Mojave monkeyflower.

The National Conservation Lands of Coolgardie Mesa encompass populations of the narrow endemic Lane Mountain milk-vetch, a federally listed Endangered species, and Barstow woolly sunflower. The area is surrounded by the Superior-Cronese ACEC and lies approximately nine miles north of Barstow, adjacent to Rainbow Basin and Owl Canyon which are also included. Coolgardie Mesa also has key habitats for Mohave ground squirrel and burrowing owl.

Mojave fringe-toed lizard habitats at the delta of the Mojave River, the Silurian Valley, and a part of Coyote Lake are part of the National Conservation Lands in this alternative. Also included are populations of Parish's phacelia in the vicinity of Coyote Lake.

Along with Mojave fringe-toed lizard habitat, the National Conservation Lands in the Silurian Valley also provide nesting habitat for golden eagles, have been recognized as important migration habitat for several sensitive species of bats, and are crossed by important migration corridors for bighorn sheep.

In Afton Canyon the Mojave River flows aboveground year-round and supports riparian woodlands with an unusual riparian plant community. It hosts many rare bird species, and the canyon cliffs are home to nesting raptors. The Salt Creek Hills area is also included as National Conservation Lands because of extensive riparian habitat, important for birds; and BLM Sensitive plant species. National Conservation Lands would encompass the Salt Creek ACEC, where riparian vegetation constitutes a rare habitat within the Mojave Desert and an important source of food, shelter, and nesting space for birds.

National Conservation Lands in this alternative will encompass large landscapes and provide habitat connectivity for terrestrial dwelling reptiles, mammals and Burrowing Owls. Important areas of habitat connectivity are between Rodman Mountains Wilderness and the Cady Mountains Wilderness Study Area (outside the subarea); between the Mojave National Preserve and Death Valley National Park through the west side of Hollow Hills Wilderness, the west side of the Kingston Range Wilderness, and the Avawatz Mountains Wilderness Study Area; and the Pilot Knob area connecting Golden Valley Wilderness and Grass Valley Wilderness.

Cultural Values

Important prehistoric and traditional cultural sites are abundant in this subarea. National Conservation Lands in this alternative would include well-known sites such as Afton Canyon, Inscription Canyon, Christmas Canyon and Calico Early Man site.

Humans in the Afton Canyon area left a record in the form of stone tools and pottery, some of it estimated to be over 8,000 years old. The first European to document a visit to Afton Canyon was Father Francisco Garces, a Spanish missionary, who came through in 1776 and called the area Painted Pass.

National Conservation Lands would include an area surrounding the Black Mountain Wilderness, including Inscription Canyon, that was listed in 2000 on the National Register of Historic Places as the Black Mountain Rock Art District. Extraordinary cultural resources include extensive assemblages of petroglyphs, significant to the religious and spiritual concerns of Native Americans; along with lithic workshops, locations suitable for surface occupation sites and game hunting, and a major transportation corridor used by prehistoric people. Part of the Black Mountain Rock Art District is within the designated Wilderness; this alternative would expand on the area of the Rock Art District that would be included in National Conservation Lands, adding Inscription Canyon, more petroglyph sites, and additional examples of all of the cultural values described.

Also among prehistoric sites listed on the National Register of Historic Places is the Calico Early Man Site, where amateur archaeologists first discovered what appeared to be primitive stone tools in 1942. Since then it has been intensively studied by scientists including famed archaeologist-paleontologist Dr. Louis Leakey, and classified as a stone tool workshop, quarry and camp site. Scientific controversy surrounds the issue of whether thousands of rocks closely resembling prehistoric tools – both on the surface and as deep as 26 feet below the surface – were actually shaped by humans or by geologic forces, because the excavated subsurface objects are many times older than currently well-accepted dates for the first human entry into the Americas. This site is part of the National Conservation Lands in this alternative.

The existing Christmas Canyon ACEC is included as National Conservation Lands in all alternatives. The ACEC was designated to protect archaeological resources associated with prehistoric reduction of lithic resources, particularly at a large chert quarry, and prehistoric and early historic sites associated with the collection and processing of edible plants. Approximately 72 cultural resource properties have been identified within the Canyon.

The Mojave Road or Mojave Trail is a historic route and present day dirt road across the Mojave Desert. The route, linking watering holes between the Colorado River and San Bernardino, was used by Native Americans and later served Spanish missionaries, explorers, foreign colonizers and settlers from the 18th to 19th centuries. Today, this rough road stretches 140 miles from the site of the old Fort Mohave (on the west bank of the Colorado River, roughly 10 miles southwest of Bullhead City, Arizona) to the site of the old Camp Cady (on the west bank of the Mojave River, roughly 12 miles northeast of Newberry Springs, California). A segment located in the subarea and passing through Afton Canyon would be included in National Conservation Lands.

The Old Spanish Trail was a historic trade route which connected the settlements near Santa Fe, New Mexico with those of Los Angeles and Southern California. The segment of the trail across the Mojave Desert was considered one of the most arduous and difficult for pioneers to navigate. The Trail saw extensive use by pack trains from about 1830 until the mid-1850s. Part of this trail passes through the Manix ACEC and Afton Canyon areas, both of which would become part of the National Conservation Lands, along with the Salt Creek area. Salt Creek is along the Old Spanish Trail route, and the creek itself is described in several historic travel accounts. Salt Creek was along the Mormon Trail, which is important to the western expansion of the United States, and was the first known Mormon mining operation in California. The mining district and other Salt Creek sites meet the criteria for inclusion in the National Register of Historic Places.

The newly proposed Silurian Valley ACEC and Silurian Valley Corridor would be included as National Conservation Lands under this alternative, with many culturally significant prehistoric and historic features. Three prehistoric sites recently recorded within the Silurian Valley appear to be Paleoindian sites possibly dating as far back as 12,000 years. Sites of this age are rare in the Americas. Representing the period of transition between the Pleistocene and Holocene periods, the sites may contribute to a better understanding of how humans have adapted to climate change in the past. These sites meet criteria for eligibility to the National Register of Historic Places.

The Silurian Valley is within the congressionally designated Old Spanish Trail corridor. Through the years, the Silurian Valley has seen little development and the historic landscape dating back to the Old Spanish Trail period is largely intact, with the exception of

the construction and paving of State Highway 127, which for the most part follows the course of the Old Spanish Trail/Mormon Road/Salt Lake Road/Santa Fe Trail. This area has been identified as having an exceptional recreational value for a driving experience to view the landscape as it was during the period of trail usage. The historic setting meets criteria for inclusion in the National Register of Historic Places.

The Tonopah and Tidewater Railroad (T&T) served as an important transportation link between the isolated mining communities of the Mojave Desert for 35 years. It originally stretched for 200 miles through remote reaches of the Mojave Desert to transport borax to market and link to the Nevada gold fields; portions are now used as a hiking trail. The nine-mile segment of the rail line that passes through the Silurian Valley conveys the difficult nature of early railroad development in the desert southwest during the historic period. This segment exhibits structural elements not seen along any of the other recorded segments of the rail line to date, including culverts, platforms, furrows, and other associated features, and meets eligibility criteria for the National Register of Historic Places.

The T&T Railroad played an important role in western expansion of the United States, making it possible for large-scale mining and settlement in the Death Valley region. The town site of Riggs, with associated mining features, is within the Silurian Valley and meets eligibility criteria for the National Register of Historic Places. Because of the association of the T&T with the local mining in the area and the town site of Riggs, and associated mining, these collectively meet criteria for eligibility as a National Register of Historic Places district.

The LADWP Boulder Transmission Line which crosses the Silurian Valley was built in 1933 to service construction of Hoover Dam and transport power to Los Angeles, and is listed on the National Register of Historic Places.

Scientific Values

Scientific values associated with all of the ecological and cultural values described above are high, offering valuable research opportunities. Unique habitats, rare endemic plant and animal species, and the Mojave River at Afton Canyon are the focus of many ecological studies on National Conservation Lands in this alternative.

The Calico Early Man Site has been extensively studied for over 70 years, providing important information to contribute to our knowledge and understanding of the past.

Paleontological research is also underway. Ongoing studies of rock formations and fossil beds at Rainbow Basin and the Manix area have provided scientists with valuable

information about life during the middle Miocene epoch, between 12 and 16 million years ago.

Acreage

This alternative would include approximately 271,000 acres of National Conservation Lands in the Mojave and Silurian Valley subarea in the Preferred Alternative.

Pinto, Lucerne Valley, and Eastern Slopes

Background Information

Lands of this subarea span diverse landscapes of the south-central Mojave Desert and the San Bernardino Mountains, from 1,000 feet to over 6,000 feet in elevation. The subarea includes most of Joshua Tree National Park, the north and east facing slopes of the San Bernardino Mountains, and desert ranges of the southern Mojave Desert.

The subareas's central portion includes the vast Twentynine Palms Marine Corps Air Ground Combat Center and the growing communities of the Morongo Basin and Lucerne Valley. These are essentially surrounded by public lands that are important to maintaining a variety of sensitive natural resources.

Existing BLM National Conservation Lands play an important conservation role in the subarea. They have already been designated by Congress for conservation purposes, and they are not subject to the alternatives under this plan: Wilderness – Pinto Mountains, San Gorgonio, Bighorn Mountains, Cleghorn Lakes (portion), Rodman Mountains, Newberry Mountains; and National Trails System – Pacific Crest National Scenic Trail.

Joshua Tree National Park is managed by the NPS and is not part of the plan alternatives, but contributes to the habitat conservation goals of the DRECP.

Alternative Description

Ecological Values

National Conservation Lands proposed in this alternative are grouped into three clusters, in the northeast, west central, and west parts of the subarea. Each cluster would weave together some of the most diverse and threatened habitats in the California desert. This diversity is represented in a national park, 10 ACECs, and two Unusual Plant Assemblages: Pipes Canyon Huge Joshua Trees and Ord Mountain Jojoba Assemblage.

National Conservation Lands in the northeast part of the subarea connect the Newberry and Rodman Mountains Wilderness Areas with the Ord Mountains complex which supports a high concentration of breeding sites for golden eagles and prairie falcons. These lands

also encompass areas important for wildlife habitat connectivity between these Wilderness Areas, and important habitat for Agassiz's desert tortoise, Mojave monkeyflower, and other sensitive species.

The west central part of the subarea is the transitional landscape between the San Bernardino Mountains and the Mojave Desert and sits on the edge of the urban interface with the Los Angeles metropolitan area. This alternative's National Conservation Lands in the Bighorn Mountains and Pipes Canyon areas form a wildlife connectivity corridor between Johnson Valley and Twentynine Palms, within the Plan Area, and National Forest lands outside the Plan Area.

National Conservation Lands in this alternative also include Juniper Flats, with habitat for the coast horned lizard and the gray vireo, both BLM Sensitive; and the Carbonate Endemic Plant Research Natural Area ACEC, which supports an unusual geologic, soil, and plant association and contains habitat for threatened and endangered species.

In the southeastern part of the subarea, National Conservation Lands in this alternative provide habitat for the Mojave fringe-toed lizard, Agassiz's desert tortoise, and other sensitive species in a region increasingly fragmented by development, private lands, and military uses. This includes the lands known as the "saddle" of Joshua Tree National Park, or the Pinto Mountains, which have high biological and cultural values and are proposed as additions to the National Park.

Cultural Values

As a region of transition between desert and coast, this subarea has a rich human history from prehistoric times to recent events, encompassing significant cultural resources. National Conservation Lands in this alternative encompass important remnants of Native American habitation, trails, and spiritual sites.

The Pipes Canyon area has numerous prehistoric resources that would meet criteria for inclusion to the National Register of Historic Places as contributing elements of an Eligible District; and has the greatest concentration of known National Register eligible sites within the area administered by BLM's Barstow Field Office. The Juniper Flats Cultural Area encompasses numerous rock shelters and village sites that meet the criteria for National Register of Historic Places listing; and, being located in a transition area between the mountains and Mojave Desert, can contribute to understanding local peoples' migration patterns. The Bighorn Mountains Wilderness, Juniper Flats ACEC, and surrounding public lands also have special significance to modern local residents for their scenic and historic values.

Late 19th and early 20th century mining and ranching facilities are found throughout the subarea, particularly the Dale Mining District in the Joshua Tree National Park "saddle." The historic WWII Desert Training Center boundary overlaps this subarea on the east, and vestiges of the DTC would be included in the National Conservation Lands.

Scientific Values

National Conservation Lands in this alternative have significant scientific value, given the diverse landscapes which link the San Bernardino Mountains with the Mojave Desert and Joshua Tree National Park. Unique soils, extremes in elevation, ancient plant clones, widespread cultural resources, and the proximity to urban Southern California all contribute to this area being a world class natural laboratory. The area is already the focus of numerous research projects and most regional universities use the proposed National Conservation Lands for teaching and study.

Acreage

This alternative would include approximately 296,000 acres of National Conservation Lands in the Pinto, Lucerne Valley, and Eastern Slopes subarea in the Preferred Alternative.

Piute Valley and Sacramento Mountains

Background Information

The remote Piute Valley and Sacramento Mountains subarea spans the transition zone between the Mojave and Sonoran Deserts. With some of the most intact and scenic landscapes in the California deserts, the subarea encompasses visual extremes: many distinct rugged mountains ranges, each with its own character; large washes, steep canyons, and expansive piedmont plains. The vistas of Piute Valley provide a nearly 360-degree panorama of mountains; and the grand-scale Chemehuevi Wash system, with washes within washes, collects the flash flood waters from mountains to the west en route to the Colorado River.

Needles, the largest city in the subarea, is located in the Mohave Valley straddling the California, Arizona and Nevada borders at the southern edge of the Mojave Desert, on the western banks of the Colorado River. Communities just outside the subarea include Bullhead City, Lake Havasu City, and Parker in Arizona, and Laughlin in Nevada. Las Vegas is 110 miles to the north. Interstate 40 and U.S. Highway 95 are the conduits for bringing visitors to the subarea.

Six BLM Wilderness Areas, overlapping with six ACECs, are currently part of the subarea. The Chemehuevi Mountains National Conservation Lands link the subarea's wildernesses to other BLM wildernesses west of the Sacramento Mountains and to the Mojave National

Preserve. A Congressionally protected wild burro population frequents the Chemehuevi Wash region, favoring the BLM public lands closest to the Colorado River.

Existing BLM National Conservation Lands play an important conservation role in the subarea. They have already been designated by Congress for conservation purposes, and they are not subject to the alternatives under this plan. All or portions of the following Wilderness Areas are within the subarea: Bigelow Cholla Garden, Chemehuevi Mountains, Dead Mountains, Stepladder Mountains, Turtle Mountains, and Whipple Mountains Wilderness Areas.

These areas are not managed by the BLM and are not part of the plan alternatives but contribute to the habitat conservation goals of the DRECP: Mojave National Preserve and Havasu National Wildlife Refuge.

Alternative Description

Ecological Values

This alternative includes National Conservation Lands around and connecting all six Wilderness Areas. The Piute Valley provides important habitat connectivity between the Dead Mountains Wilderness and the Piute Range in the Mojave National Preserve to the west; and the Newberry Mountains in Nevada to the northeast.

National Conservation Lands include the watershed draining through Chemehuevi Wash to the Colorado River, except for the lower Wash as it narrows toward the Colorado River between the Chemehuevi Mountains and Whipple Mountains Wilderness; and lands in the Homer Wash, a large Mojave Desert wash system in Ward Valley running from the westernmost point of the Bigelow Cholla Garden Wilderness south to the west side of the Stepladder Mountains Wilderness.

The Whipple Mountains are particularly important for their vegetation. Recent botanical studies have uncovered species previously unknown in California but typical of the Upper Sonoran Zone further east across the Colorado River in Arizona.

In the Mojave Desert zone of this subarea, the Bigelow Cholla Garden Wilderness is included in existing National Conservation Lands. The wilderness hosts the largest population of teddybear (Bigelow) chollas, in an Unusual Plant Assemblage. New National Conservation Lands would encompass more teddybear cholla stands in the Chemehuevi Valley and the Sacramento Mountains.

The Chemehuevi Valley provides critical habitat for desert tortoise and other Mojave and Sonoran Desert animal and plant species. Chemehuevi Wash, which drains the center of the valley, is home to the northernmost Sonoran Desert microphyll woodland in California;

massive old-growth blue palo verde trees; and a carefully documented Unusual Plant Assemblage of thriving Emory's crucifixion thorn shrubs.

Sonoran Desert microphyll woodlands in washes provide cover and food for migratory land birds traveling on the Colorado River Flyway. This alternative's National Conservation Lands in the northernmost headwaters of the Vidal Wash system and the core of Chemehuevi Wash are important microphyll woodland habitats for nesting birds, including rare species such as long-eared owl, Arizona Bell's vireo, Crissal and Bendire's thrashers, and Lucy's warbler. The woodlands provide good winter habitat for raptors, mountain bluebirds, and many sparrow species.

This alternative includes National Conservation Lands in upland areas with extensive habitat for declining species such as burrowing owl, loggerhead shrike, and American badger. Cliffs and ledges provide nesting habitat for golden eagles and prairie falcons.

Important linkages providing habitat connectivity for wildlife are included. Habitat corridors connect the major Chemehuevi and Fenner-Paiute desert tortoise population centers to other centers to the west. Desert bighorn sheep benefit from the intact landscape connectivity among large, mountainous wilderness areas included in National Conservation Lands.

Bats find maternity and hibernation habitat in abandoned mines, mainly located in existing designated Wilderness and in proposed National Conservation Lands in the Sacramento Mountains; and with food sources nearby along the Colorado River and throughout the subarea. This alternative would give National Conservation Land status to important foraging habitat for BLM Sensitive bat species: fringed myotis, Yuma myotis, California leaf-nosed bat, and the site of a pallid bat colony in the Sacramento Mountains.

Important special status plant populations would be included in National Conservation Lands in this alternative: Kofa Mountain bearberry (*Berberis harrisoniana*), glandular ditaxis (*Ditaxis claryana*), wand-like fleabane daisy (*Erigegon oxyphyllus*), Graham's fishhook cactus (*Mammalaria grahamii* var. *grahamii*), spiny-hair blazing star (*Mentzelia tricuspis*), Arizona pholistoma (*Pholistoma auritum* var. *arizonicum*), and narrow-leaved psorothamnus (*Psorothamnus fremontii* var. *attenuatus*).

Cultural Values

Lands draining to the Colorado River have long been important to native peoples, with numerous cultural sites significant to the Colorado River Tribes and other Native American groups. National Conservation Lands include ancient petroglyphs, pictographs, trails, and stonework sites, and bear witness to the lives of the first peoples.

Ancestors of the Fort Mojave Indian Tribe lived in the Mojave Valley area for thousands of years prior to the European exploration of the area. In the Mojave language they call themselves the "Pipa Aha Macav," meaning "people who live along the river." To the south along the river at the mouth of Chemehuevi Wash are the lands of the Chemehuevi Indian Tribe. Tribe members, Nuwu (the People), are descendants of nomadic residents of the eastern Mojave Desert mountains and canyons and the Colorado River shoreline. The southeast edge of the subarea borders the north end of the Colorado Indian Tribes reservation, where members of the Chemehuevi, Mojave, Hopi, and Navajo tribes reside. Significant cultural and historic resources proposed as National Conservation Lands in this alternative include many prehistoric and historic sites associated with, but not adjacent to, the Colorado River. These lands would encompass cultural sites, including trails, sacred sites and petroglyphs, significant to federally recognized tribes and other Native American groups.

The Sacramento Mountains have many prehistoric sites and features, most notably remnants of a northeast-southwest trending trail system that traverses the range, with associated sites and artifacts indicating seasonal and continuous usage. The trail continues to have high cultural significance, especially to the Fort Mohave Indian Tribe who have a name for the trail and still actively visit sites along it. Historic sites are also found in the Sacramento Mountains, with those in the south associated with mining; and in the north, with the World War II Desert Training Center. Sites on the west side of the Sacramento Mountains are included as National Conservation Lands under this alternative.

National Conservation Lands in this alternative include lands within the proposed Mojave Trails National Monument. The portions of the historic Mojave Road (Mojave Trail) and the Old Spanish National Historic Trail from the Nevada state line to the eastern boundary of the Mojave National Preserve would be part of the National Conservation Lands. The Mojave Trail was used prehistorically by Native Americans, and historically by explorers and pioneer immigrants.

A segment of historic U.S. Route 66, the major route from the 1920s through the 1960s for immigrants moving to California from the Midwest, is located within the subarea. This entire segment would be part of the National Conservation Lands in this alternative.

A portion of the subarea was part of the World War II Desert Training Center, also known as the California-Arizona Maneuver Area. From 1942 to 1944, the deserts of Southern California and Arizona became a combat training center for the largest military training exercise of its time. Close to a million American soldiers cycled through a series of twelve primitive base camps – collectively known as Patton Camps – from which they conducted large-scale military maneuvers. One camp in this subarea, Camp Ibis, was at its height home to several Armored Divisions, each numbering over 20,000 troops. A series of roads

and rock-outlined trails remain, along with insignia and scattered paraphernalia, wires, buttons and canteens. The largest remaining structure is a concrete reservoir to the northeast of the old Division Headquarters. Camp Ibis and its environs are part of this National Conservation Lands designated under this alternative.

Scientific Values

The Chemehuevi Wash system is about 15 miles wide where it crosses Highway 95, draining from six blocks of mountains: the Turtle Mountains in the southwest, Stepladder Mountains on the west, Sacramento Mountains on the north, Chemehuevi Mountains on the northeast, and Whipple Mountains on the southeast. Unique geological, biotic, and cultural features make the Chemehuevi Wash watershed a valued resource for multidisciplinary scientific inquiry. To the west, Homer Wash running through Ward Valley is a larger-scale Mojave Desert wash system that provides a contrast in processes between the Sonoran and Mojave Deserts.

Due to the importance of the proposed National Conservation Lands for recovery and conservation of desert tortoise, other special status animal and plant species, and unique vegetation alliances, scientific and research values are high. The continuum of intact Mojave Desert habitats encompassed by National Conservation Lands, including riparian areas, springs, Joshua tree woodlands, and big galleta shrub-steppe offers abundant research opportunities. Plant communities at the limits of their range, such as the Whipple Mountains' saguaro cactus population, are of unique value to scientists studying the ecological factors that define their extent.

The Teddybear Cholla (*Opuntia bigelovii*) Research Natural Area, included in this alternative as National Conservation Lands, supports the northernmost population of teddybear cholla in the subarea. Bisected by Interstate Highway 40, the area lies on a gently sloping Quaternary alluvial plain on the west side of the Sacramento Mountains and is an outstanding example of stands of cholla within a creosote bush scrub community. The University of California manages the adjacent Sacramento Mountains Reserve as a center for ecological research. Geologists have also worked extensively in this area.

Many archaeological and anthropological studies are being conducted by scientists from the University of California and other academic institutions. These important studies contribute to better knowledge and appreciation of how humans have adapted to the harsh desert environment.

Acreage

This alternative would include approximately 417,000 acres of National Conservation Lands in the Piute Valley and Sacramento Mountains subarea in the Preferred Alternative.

South Mojave-Amboy

Background Information

This central part of the Mojave Desert encompasses some the most iconic features of the CDCA. The Old Woman and Providence Mountains provide a dramatic backdrop to the intervening valleys and mountain ranges. The subarea includes some of the most diverse geologic features of the Mojave Desert, such as volcanic cinder cones and lava flows (Amboy and Pisgah Craters), limestone formations (Mitchell Caverns), and some of the tallest sand dunes in the nation (Kelso Dunes). The Marble Mountain Range contains one of the classic Cambrian trilobite fossil sites of the United States. The Marble Mountain Fossil Beds lie in a beautiful shale formation that is 60 feet thick and over 550 million years old. While some of these features are protected, similar geologic resources are found throughout the subarea and are vulnerable to impacts from mining and other development. A large portion of the Mojave National Preserve is located in the northern part of the subarea, and historic U.S. Route 66 extends across the entire subarea.

Existing BLM National Conservation Lands play an important conservation role in the subarea. They have already been designated by Congress for conservation purposes, and they are not subject to the alternatives under this plan: all of the Clipper Mountains, Piute Mountains and Trilobite Wildernesses; parts of the Bigelow Cholla Garden, Bristol Mountains, Cleghorn Lakes, Kelso Dunes, Old Woman Mountains and Sheephole Valley Wildernesses; and part of the Cady Mountains Wilderness Study Area.

These areas are not managed by the BLM and are not part of the plan alternatives but contribute to the habitat conservation goals of the DRECP: Joshua Tree National Park (very small part), Mojave National Preserve (part), Providence Mountains State Recreation Area/Mitchell Caverns Natural Preserve.

Alternative Description

<u>Ecological Values</u>

The subarea has some of the best-quality habitat for Agassiz's desert tortoise in the southeast Mojave Desert, with a third of the Chemehuevi ACEC within the subarea. The BLM established this ACEC as an ACEC to conserve critical Agassiz's desert tortoise habitat. National Conservation Lands in this alternative link the Ord-Rodman ACEC with the Chemehuevi ACEC across the Amboy-Cadiz Valley area. The transitional ecosystem attracts a variety of birds including sensitive species such as burrowing owl, loggerhead shrike, and Bendire's thrasher as well as desert raptors such as prairie falcon.

National Conservation Lands in this alternative also encompass specialized dune habitat for Mojave fringe-toed lizards; and roosting habitat for BLM Sensitive bat species: Townsend's big-eared bat, pallid bat, California leaf-nosed bat and Western small-footed myotis.

Many rare and sensitive plants with highly localized ranges are included in National Conservation Lands in this alternative: small-flowered androstephium (*Androstephium breviflorum*), Emory's crucifixion-thorn (*Castela emoryi*), Clokey's cryptantha (*Cryptantha clokeyi*), Arizona cymopterus (*Cymopterus multinervatus*), glandular ditaxis (*Ditaxis claryana*), Harwood's eriastrum (*Eriastrum harwoodii*), Orocopia Mountains spurge (*Euphorbia jaegeri*), knotted rush (*Juncus nodosus*), Darlington's blazing-star (*Mentzelia puberula*), Robison's monardella (*Monardella robisonii*), white-margined beardtongue (*Penstemon albomarginatus*), desert beardtongue (*P. pseudospectabilis* ssp. *pseudospectabilis*), Stephens' beardtongue (*P. stephensii*), and lobed ground-cherry (*Physalis lobata*).

Between the Clipper Mountains and the Trilobite Wilderness Areas is Bonanza Spring, one of the few natural watering areas for wildlife in the Mojave Desert. National Conservation Lands would include this reliable and critical water source for bighorn sheep and other species that traverse this vast, arid landscape.

National Conservation Lands in this alternative also include an unusual invertebrate assemblage associated with lava tubes in and around the Pisgah Crater; some species may not yet be described by science.

This alternative provides connectivity among all Wilderness Areas, and links the Mojave National Preserve to Joshua Tree National Park to the south, with National Conservation Lands.

The Castle Mountains area surrounded by the Mojave National Preserve would also be included. The Castle Mountains area is a critical linkage between the Piute Mountains and the New York Mountains. The high-quality desert habitat of the Castle Mountains ensures the long-term survival of Joshua tree woodlands and many wildlife species, including desert bighorn sheep, which use it both as habitat and as a wildlife corridor between the water-poor Piute Mountains and the wetter New York Mountains. The Castle Mountains have Utah juniper woodland at higher elevations, and a unique assemblage of 15 species of native perennial grasses occurs here.

Cultural Values

This subarea, including National Conservation Lands in this alternative, is particularly rich in cultural resources. Recently an important geoglyph has been discovered here, only the

second site of this specific type known; this site meets criteria for eligibility to the National Register of Historic Places. Many other culturally significant sites and landscapes are important to local and regional tribes. Outstanding Native American prehistoric resources include an obsidian source in the Castle Mountains area that provided material found throughout the Mojave Desert.

Significant trails and travel corridors used for thousands of years crisscross the area. Native American trade routes were subsequently used by Spanish, Mexican, and American explorers, soldiers, miners, and traders. U.S. Route 66, one of the earliest and most revered cross country motor routes, traverses the middle of the subarea and is still enjoyed by motorists today. The proposed Mojave Trails National Monument encompasses these along with outstanding scenic values; most of the proposed National Monument is included in this alternative's National Conservation Lands.

Amboy Crater is visible from a great distance as a prominent landscape feature and served as a landmark for Native Americans and early explorers, guides and immigrants. It is today recognized as a National Natural Landmark with outstanding historic and scenic values.

Remnants of the railroad, ranching and mining history of the old West are scattered throughout the National Conservation Lands in this alternative, including the historic Barnwell railroad grade (now inactive), the historic town of Hart, and the Hart and Viceroy mines in the Castle Peak area. Also included in National Conservation Lands are remnants of the Tonopah and Tidewater railroad (inactive), and the Atchinson, Topeka and Santa Fe (still active). Bonanza Spring was used as a water source along U.S. Route 66 and provided water for historic railroad steam engines. These contribute to a rich legacy of western-American and mining history.

Much of the World War II California-Arizona Maneuver Area and Desert Training Center lies within this subarea; its associated camps and maneuver areas are some of the last tangible remnants of World War II in the continental United States. These sites are scattered across this subarea, may be eligible for the National Register of Historic Places, and would be included as National Conservation Lands.

The scenic view from Hart Mountain looks out over adjacent and contiguous wilderness, including views of many of the highest peaks in the Mojave Desert. The remote nature of this area offers present-day residents and visitors the opportunity to enjoy increasingly rare natural soundscapes.

Scientific Values

Due to the importance of areas included as National Conservation Lands in this alternative for the recovery and conservation of desert tortoise and other species, ecological research

opportunities abound. With its extensive habitat linkages, this unit offers unparalleled opportunities to study wildlife movement and connections between diverse habitats. Ongoing studies of desert tortoise, bighorn sheep and other special status plants and animals provide a wealth of knowledge on the health of these species' populations, habitats and ecosystems. The subarea also offers opportunities to study groundwater and climate change to help guide future management.

The paleontological resources of the area, such as the Marble Mountains fossil beds, contribute to understanding earth's history. National Conservation Lands in this alternative also have some of the best examples of volcanism in the California desert, important both for research and as accessible natural laboratories for students and the general public. Amboy Crater National Natural Landmark provides an outstanding educational example of a symmetrical volcanic cinder cone and, along with the Pisgah area, often serves as a Mars analog for studying soil erosion and deposition processes and for testing scientific techniques and equipment including Mars rovers.

With its rich cultural resources, this subunit provides abundant opportunities for studies of humans' prehistoric and historic ways of adapting to this arid environment, and contributes to better understanding of diverse cultures. Research is promoted by cooperative management of these resources by the BLM and Native American tribes.

Acreage

This alternative would include approximately 638,000 acres of National Conservation Lands in the South Mojave-Amboy subarea in the Preferred Alternative.

Western Desert and Eastern Slope

Background Information

Elevations within the Western Desert and Eastern Slope subarea vary from about 2,000 feet to more than 8,000 feet. Mountains rise abruptly from the desert floor, creating dramatic changes in climatic conditions over short distances. The area's great diversity of vegetation communities reflects these changes in moisture and temperature. With increasing elevation, the area transitions from Mojave Desert creosote scrub through Joshua tree woodland to pinyon/juniper and oak/pine assemblages. Joshua trees may be found in close association with singleleaf pinyon pine, juniper, gray pine, Jeffrey pine, and canyonlive oak, blending Mojave and Sierran associations and resulting in a high level of biodiversity. When the area has received sufficient moisture, colorful wildflower displays are some of the most spectacular in the West Mojave Desert.

The subarea provides habitat for diverse wildlife species, including black bear, coyote, badger, mountain lion, bobcat, and important game species such as mule deer, Chukar, Mountain Quail and California Quail. Perennial streams flow though several of the canyons in the Piute Mountains and the Eastern Sierra and provide aquatic and riparian habitats, which are rare in Southern California. These riparian areas provide essential migration stop-over habitats for neotropical migratory birds, as well as nesting habitat for both migrant and resident bird species. The subarea also has high-quality habitat for raptors, and for a number of special-status animals and plants.

The cultural values of the subarea are as diverse as the ecological values and include a range of cultural resource property types from prehistoric lithic scatters to ethnographic villages and historic mining features. This area falls within the traditional homelands of the Kawaiisu, Serrano, Kitanemuk, Tubatalabal, Chemehuevi, and Western Shoshone tribal groups; places of traditional cultural importance are found throughout.

Existing BLM National Conservation Lands play an important conservation role in the subarea. They have already been designated by Congress for conservation purposes, and they are not subject to the alternatives under this plan: Pacific Crest National Scenic Trail; Kiavah, Black Mountain, Grass Valley, Golden Valley, El Paso Mountains (southwest portion), Owens Peak (south portion), Bright Star, El Paso Mountains, and SacatarTrail Wilderness Areas.

These areas are not managed by the BLM and are not part of the plan alternatives but contribute to the habitat conservation goals of the DRECP: Red Rock Canyon State Park, Audubon's California Kelso Creek Sanctuary and Kern River Preserve.

Alternative Description

Ecological Values

This alternative incorporates as National Conservation Lands important habitat linkages between the El Paso Mountains Wilderness and the Kiavah Wilderness for all wildlife. These are particularly important for sustaining populations of Mohave ground squirrel, a State-listed species, along with small portions of two other core population centers included in the Fremont Valley area.

The Desert Tortoise Research Natural Area (reduced in this alternative by approximately 250 acres) and the Western Rand Mountains (reduced in this alternative by approximately 1,000 acres), which constitute part of the Fremont-Kramer unit of designated desert tortoise critical habitat, also become National Conservation Lands in this alternative.

National Conservation Lands in the Preferred Alternative include north-south and east-west linkages across the subarea, encompassing stopover sites and habitat connectivity for the Pacific migratory bird flyway along the eastern flank of the Sierra. The National Audubon Society has nominated the riparian areas in the Sierra canyons as Important Bird Areas.

Kelso Valley and the Piute Mountains have scattered springs that are essential components of migratory and breeding bird habitat in the southern Sierra Nevada forests; and the California Audubon Kern River Preserve, the largest contiguous cottonwood riparian forest in California (preserve itself is outside of the DRECP boundary). National Conservation Lands in this alternative include Butterbredt Canyon and Spring, where birders come from all over the world to see fantastically high numbers of birds during spring migration. It is designated as a Globally Important Bird Area by the American Bird Conservancy, a renowned organization dedicated to world-wide bird conservation. Also included in National Conservation Lands is Kelso Valley Bendire's thrasher habitat, consisting of areas with blackbrush, junipers, Wiggins' cholla and Joshua trees. Bendire's thrasher is a California Species of Special Concern and a BLM Sensitive Species.

This subarea supports high densities of golden eagles for Southern California because canyon cliffs and adjacent valleys offer exceptional habitats for nesting and foraging. National Conservation Lands additions in the Preferred Alternative include Golden Eagle nesting sites on the cliffs on either side of Kelso Valley and other Sierra Nevada canyons, linking together a broad foraging area between the Sierra Nevada front and the El Paso Mountains Wilderness. This alternative's National Conservation Lands also include habitat for California condor as the species expands into its former range.

This alternative's National Conservation Lands include the southern Sierra peak of Middle Knob, which is exceptional habitat for raptors and provides unique soil conditions for sensitive plant species; and highly Unusual Plant Assemblages in the Piute Mountains where Joshua trees mingle with Jeffrey pines.

Riparian areas that adjoin drainages in Sequoia National Forest provide a preferred habitat of the Tehachapi slender salamander, riparian areas with fallen logs. This salamander is a State-listed Threatened species found only in isolated areas of the Piute and Tehachapi Mountains.

Rare plant populations and habitats encompassed by National Conservation Lands in this alternative include, in the Piute Mountains, a population of the BLM special status species Palmer's mariposa lily (*Calochortus palmeri* var. *palmeri*) with its showy pink blossoms; in Kelso Valley, the entire known range of the beautiful, minute Kelso Creek monkey flower (*Mimulus shevockii*); and the unusual botanical diversity of Short Canyon with rare endemic

plants such as Charlotte phacelia (*Phacelia nashiana*), Latimer's woodland gilia (*Saltugilia latimeri*), and State-listed Endangered Mojave tarplant (*Deinandra mohavensis*)

National Conservation Lands in this alternative also include quality habitat for burrowing owl and Townsend's big-eared bat, both BLM sensitive species.

Cultural Values

Prehistoric cultural resource properties found throughout this subarea are considered extraordinary examples of prehistoric lifeways. These include extensive assemblages of petroglyphs and pictographs, lithic workshops, obsidian and chert resource quarries, milling complexes, prehistoric and ethnographic village sites and burial complexes. These assemblages represent in excess of 10,000 years of human occupation, with the potential for many more properties with assemblages that will further our knowledge of the past. Also included are major transportation corridors and trade routes across the Sierra Nevada mountain range from the Mojave Desert to the Central Valley and California Coast. These are vital to our understanding of patterns of mobility of prehistoric and historic people of the Mojave Desert in relation to the resources and cultural groups in the Sierra Nevada, Central Valley, and Pacific Coast.

Historic resources are likewise abundant, many of which are superb examples of sites associated with exploration by the Spanish and Euro-Americans, contact with Native American communities in California, the advancement and development of the Western frontier, American vernacular architecture, mining landscapes in the West, and the Civilian Conservation Corps.

Native American values in this subarea include sacred sites, places of religious and ceremonial importance, and areas of traditional use and gathering of the Tubatalabal, Kitanemuk, Serrano, Chemehuevi, Southern Paiute, and Kawaiisu people. The majority of these tribal groups are not currently federally recognized; National Conservation Lands in this alternative include areas important to the management and preservation of the resources significant to these cultural groups, particularly those within the Jawbone-Butterbredt area, encompassing large portions of the landscape where these significant resource values have been identified.

Well-known and National Register listed sites encompassed by National Conservation Lands proposed in this alternative include Last Chance Canyon, Black Mountain, and Inscription Canyon National Register Archaeological Districts; portions of the First Los Angeles Aqueduct and its associated construction camps; Blackwater Well; Boulder Springs; Bird Springs Pass; and a small portion of the Twenty Mule Team Road at the west end of Pilot Knob north of Grass Valley Wilderness.

Scientific Values

All of the ecological and cultural resources described above have scientific value, and many are currently undergoing intensive research. Point Blue (formerly PRBO Conservation Science) collects data on migratory birds using the flyway along the east side of the Sierra range, where birds stop at Little Lake in this subarea before continuing north to Haiwee Reservoir and Owens Lake as they migrate through the valley. The US Fish and Wildlife Service is conducting studies on the California Condor as this species expands further into its former range. Researchers are studying Golden Eagles to better understand their home ranges and migratory movements. In the western portion of the subarea, researchers are attempting to define the range and population status of the Tehachapi slender salamander.

The Desert Tortoise Research Natural Area, included as National Conservation Lands in this alternative, has been the location of numerous scientific research projects because of its protected, recovering desert habitat. While the main focus of peer reviewed projects at this Research Natural Area has been desert tortoises and their habitat, studies also address Mohave ground squirrels, desert kit foxes, birds, lizards and plant communities, along with different habitat management techniques.

The Townsend's big-eared bat is the focus of several studies since populations of this species are steeply declining. Scientific studies of the Mohave ground squirrel and its essential habitat are also ongoing.

Archaeological, cultural, and historic research being conducted on National Conservation Lands proposed in this alternative is contributing greatly to the understanding of human adaptation in a wide range of ecological zones, landscape use and mobility by prehistoric and historic people, and the diversity and interaction spheres of cultural groups in this and surrounding regions.

Acreage

This alternative would include approximately 200,000 acres of National Conservation Lands in the Western Desert and Eastern Slope subarea in the Preferred Alternative.

II.3.2.2.2 National Trails

Congress designates National Trails and the Secretary of the Interior or Agriculture is responsible to assign an agency with National Trail administration responsibility. After Congressional designation, the BLM conducts an inventory of designated trails under FLPMA and National Trails System Act authorities; addresses the National Trail Management through the land use planning process, including the establishment of the National Trail Management Corridor; and manages and monitors the National Trail in

coordination with the National Trail administering agency, tribes, other agencies, partners, and interested parties.

The DRECP will make decisions for three National Trails (Pacific Crest National Scenic Trail, Old Spanish National Historic Trail and the Juan Bautista de Anza National Historic Trail) to designate the National Trail Management Corridors and management actions to safeguard the nature and purposes for the national trail designation. The corridors will provide for quality outdoor recreation potential and for the conservation and enjoyment of the nationally significant, scenic, historic, natural or cultural qualities of the areas through which the National Scenic and Historic Trails may pass.

II.3.2.2.2.1 National Scenic and Historic Trails

Goals and Objectives

Goals

- Maintain the Pacific Crest Trail corridor to provide an opportunity to experience and reflect upon the wide variety of scenic, cultural, historic, and physiographic setting characteristics of the Pacific Crest Trail and adjacent lands.
- Preserve and protect the historical remains and historical settings of the Old Spanish and Juan Batista De Anza Trails and their associated historic sites for scientific study, conservation of cultural values, and for public use and enjoyment.

Objectives

- Reduce the potential for uses and do not authorize activities that substantially interfere with the nature and purposes of the NSHT.
- Maintain and enhance the significant qualities of high-potential National Historic Trail (NHT) route segments and sites as defined in the National Trails System Act. Avoid adverse effects (as defined in the National Historic Preservation Act and the BLM/SHPO CA State Protocol) upon intact NHT segments, their settings, and associated sites.
- Protect remnants, traces, graves, campsites, landmarks, artifacts, and other remains associated with the NHTs to enhance historical research and public use and enjoyment.
- Safeguard the nature and purposes; and conserve, protect, and restore the NSHT resources, qualities, values, and associated settings and the primary use or uses.
- Provide for quality outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which the NSHT may pass.

- Conserve, protect, and restore the NSHT resources, qualities, values, and associated settings and the primary use or uses; provide premier trail visitor experiences for public benefit.
- Where transmission corridors parallel NSHT, placement and design must be performed in a manner that minimizes National Trail visual settings.
- Coordinate and collaborate on the management of the NSHT with the National Park Service, U.S. Forest Service, Pacific Crest Trail Association, the Old Spanish Trail Association, Anza Trail Foundation, and other partners to safeguard the nature and purposes of each National Trail, and maintain the scenic character and qualities of the trails.

Conservation and Management Actions

- **Management Corridor Width (see also maps)**: Establish a National Trail Management Corridor width generally 5 miles from the centerline of the trail.
- **Management of Trail Corridors -** Manage National Trails as components of the BLM's NLCS. Where National Trails overlap other National Conservation Lands, the more protective CMAs or land use allocations will apply.
- Lands and Realty
- Land Use Authorizations
- **Site Authorization –** NSHT Management Corridors would be avoidance areas. Sites authorizations would require mitigation/compensation resulting in net benefit to the NSHT.
- **Linear Rights-of-Way –** NSHT Management Corridors would be avoidance areas except in designated transmission corridors. Exclude cultural landscapes, high potential historic sites, and high potential route segments identified along historic trails corridors from transmission except in approved transmission corridors. Where development affects trail management corridors, an analysis must be performed to ensure that it does not substantially interfere with the nature and purposes of the trail, and that mitigation/compensation results in a net benefit to the trail.
- **Renewable Energy Rights-of-Way** - Exclude cultural landscapes, high potential historic sites, and high potential route segments identified along historic trails corridors from transmission except in approved DFAs and transmission corridors. Where development affects trail management corridors, an analysis must be performed to ensure that it does not substantially interfere with the nature and purposes of the trail, and that mitigation/compensation results in a net benefit to the trail.

- Land tenure
- Exchange would be permitted if it results in net benefit to NSHT values.
- Purchase and donations would be also be permited to acquire lands within NSHT.
- Minerals
- **Locatable minerals** – For the purposes of locatable minerals, National Trail corridors would be treated as "controlled" or "limited" use areas in the CDCA, requiring a Plan of Operations for greater than casual use under 43 CFR 3809.11.
- **Saleable minerals** – NSHT Management Corridors would be available for saleable mineral development if it does not substantially interfere with nature and purpose of NSHT, and would require mitigation/compensation must result in net benefit to NSHT values
- **Leasable minerals** - NSHT Management Corridors would be available for leasing with a no surface occupancy stipulation. Surface coal mining would not be allowed within the NSHT Management Corridors.
- **Recreation and Visitor Services** - Commercial and competitive Special Recreation Permits would be considered on a case-by-case basis for activities consistent with the values of the National Conservation lands unit.
- Cultural Resources
- Undertakings that result in adverse effects to NHTs and NSTs that are historic properties as defined under Section 106 of National Historic Preservation Act and the implementing regulations at 36 CFR Part 800 will not be authorized.
- All NHT segments will be assumed to contain remnants, artifacts and other properties eligible for the National Register of Historic Places, pending evaluation.
- **Visual Resources Management** - All NSHT Management Corridors will be designated as VRM Class II, except within approved transmission corridors (VRM Class III) and DFAs (VRM Class IV). However, state of the art VRM BMPs for renewable energy will be employed commensurate with the protection of nationally significant scenic resources and cultural landscapes to minimize the level of intrusion and protect trail settings.
- **Mitigation Requirements** - If a segment of a National Trail or proposed NHT traverses a DFA, it will be subject to mitigation for impacts to trail features, including, but not limited to, and not in priority order: avoidance, the cost of trail relocation, on-site mitigation and off-site mitigation. Compensation can include acquisition or restoration of corridor features and landscapes will be at a minimum of 2:1, and must result in a net benefit to the overall trail corridor. Development of

high potential route segments must not substantially interfere with the nature and purposes of the National Trail.

II.3.2.2.2.2 National Recreational Trails

Goals and Objectives

- Provide continued support for National Recreation Trails, to recognize exemplary trails of local and regional significance pursuant to the National Trails System Act of 1968. While National Scenic and National Historic Trails may only be designated by an act of Congress, National Recreation Trails may be designated by the Secretary of Interior or delegated officer through a standardized procession including a recommendation and nomination by the BLM.
- Support the goals of the NRT program to promote the use and care of existing trails and stimulate the development of new trails to create a national network of trails and realize the vision of "Trails for All Americans."

Conservation and Management Actions

- The Nadeau Road NRT was designated by the Secretary of the Interior in June 2013. The California Desert District proposes to nominate the Sperry Wash Road, El Mirage Interpretive Trail East, and El Mirage Interpretive Trail West for NRT designation.
- The Nadeau NRT Management Corridor will be protected and development avoided within 0.5 mile from centerline of the route.

II.3.2.2.3 National Wild and Scenic Rivers

Management of National Wild and Scenic Rivers would be the same as the No Action Alternative.

II.3.2.2.4 Areas of Critical Environmental Concern

ACEC designations highlight areas where special management attention is needed to protect, and prevent irreparable damage to, important historic, cultural, and scenic values, fish, or wildlife resources or other natural systems or processes; or to protect human life and safety from natural hazards. The ACEC designation indicates to the public that the BLM recognizes that an area has significant values and has established special management measures to protect those values. In addition designation also serves as a reminder that significant value(s) or resource(s) exist that must be accommodated when future management actions and land use proposals are considered near or within an ACEC. Designation may also support a funding priority. Proposed ACECs and their associated

management prescriptions must be identified and fully described in proposed RMPs and plan amendments. (BLM Manual 1613 [1988]).

The Preferred Alternative would include 127 ACECs, totaling approximately 5,403,000 acres (non-overlapping ACEC acres) on BLM-administered lands (includes ACECs within Existing Protected Areas). Required elements of the ACECs (Name, Location, and Size; Description of Value, Resource System, or Hazard; and Provision for Special Management Attention) and maps of each unit are included in the Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L. Where ACEC Management does not address a resource or use, the Plan-wide ACEC CMAs listed in Section II.3.2.3 will apply to that unit.

II.3.2.2.5 Wildlife Allocations

Wildlife resources are an important value managed by the Bureau. Bureau lands provide habitats for a variety of plant and animal species. Wildlife Allocation is a land use designation wherein the management of the lands identified will emphasize protection and enhancement of these important plant and animal habitats. The Wildlife Allocation Designation does not eliminate other existing land uses. New activities or modifications of existing land uses within these areas must be compatible with and not contrary to the wildlife values or the protection and enhancement of wildlife and plant habitat. Authorized officers will make a finding that any decision in these areas is consistent with these values.

The Preferred Alternative would include approximately 18,000 acres of Wildlife Allocations on BLM-administered lands. Descriptions and maps are included in the Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L. Specific CMAs for Wildlife Allocations are listed in Section II.3.2.3.

II.3.2.2.6 Recreation Management Areas

II.3.2.2.6.1 Special Recreation Management Areas

As defined in the BLM Land Use Planning Handbook (H-1601-1 (2005), Special Recreation Management Areas (SRMAs) are public lands units identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific structured recreation opportunities (i.e., activity, experience, and benefit opportunities). Both land use plan decisions and subsequent implementing action for recreation in each SRMA are geared to a strategically identified primary market – destination, community, or undeveloped areas. SRMAs are proposed throughout the plan area, including as an overlapping land allocation on all existing "open" and "limited" use OHV areas.

The Preferred Alternative would include 31 SRMAs (2,724,000 acres on BLM-administered lands). Descriptions, maps, and management actions for each SRMA are included SRMA Management Plans in Appendix L.

II.3.2.2.6.2 Extensive Recreation Management Areas

As defined in the BLM Manual for Planning for Recreation and Visitor Services (MS-8320) (BLM 2011a) and the BLM Land Use Planning Handbook (H-1601-1), ERMAs recognize existing recreation use, demand, or recreation and visitor services program investments and are managed to sustain principal recreation activities and associated qualities and conditions of the ERMA, commensurate management with other resources and resource use. ERMAs are proposed in the geographic area managed by the BLM Needles Field Office. and would include approximately 879,000 acres.

II.3.2.2.7 Lands Management to Protect Wilderness Characteristics

Under the preferred alternative, 298,000 acres that were inventoried and found to have wilderness characteristics would be managed to protect these characteristics. Management for these lands is detailed in the BLM-Specific CMAs in Section II.3.2.3.

II.3.2.3 BLM-Specific Conservation and Management Actions

The management of the following resources includes proposed changes from the no action alternative. For those resources that are not included below, the existing management as per the appropriate land use plan would apply. Specific individual CMAs were developed for National Conservation Lands, ACECs, and SRMAs. These CMAs will serve as a "fall back" for these areas. If there is a conflict, the specific National Conservation Land unit, ACEC, or SRMA Management Plan contained in Appendix L will apply. If multiple CMAs with compensation requirements apply to a particular project, these compensation requirements may be "nested"—that is, one mitigation action may satisfy multiple mitigation requirements—if appropriate.

II.3.2.3.1 Air Resources

Air quality is a concern across the Planning Area, with many of its air basins having been designated non-attainment areas under the Clean Air Act (CAA) of 1970 and Amendments of 1977 and 1990 (42 U.S.C. 7401 et seq.).

The CAA prohibits any federal land management agency from conducting, supporting, approving, licensing, or permitting any activity on federal land that does not comply with all applicable local, state, tribal, and federal air quality laws, statutes, regulations, ordinances, and implementation plans. These prohibitions are reinforced for the BLM via FLPMA. In support of these regulations, dust control plans have been or are being

developed for portions of the Planning Area in order to decrease air pollutant concentrations, increase visibility, and decrease atmospheric deposition. Adherence to air quality regulatory programs through coordination between federal and state agencies is a key to air quality management success.

Other applicable sections of the CAA include:

- Applicable National Ambient Air Quality Standards (NAAQS; Section 109)
- State Implementation Plans (SIPs; Section 110)
- Control of Pollution from Federal Facilities (Section 118)
- Prevention of Significant Deterioration, including visibility impacts to mandatory Federal Class I Areas (Section 160 et seq.)
- Conformity Analyses and Determinations (Section 176[c])

Under this plan, areas will be managed to protect their air quality and visibility in accordance with Class II objectives of Part C of the CAA amendments, unless designated another class by the State of California as a result of recommendations developed by any regional air quality management plan.

II.3.2.3.1.1 Goals and Objectives

This alternative would not amend existing goals and objectives in the current land use plans.

II.3.2.3.1.2 Conservation and Management Actions for the Entire Planning Area

- All project authorizations within the DRECP must meet the following requirements:
    - Applicable National Ambient Air Quality Standards (Section 109).
    - State Implementation Plans (Section 110).
    - Control of Pollution from Federal Facilities (Section 118) including non-point source.
    - Prevention of Significant Deterioration, including visibility impacts to mandatory Federal Class I Areas (Section 160 et seq.).
    - Conformity Analyses and Determinations (Section 176[c]).
    - Apply best management practices on a case by case basis.
    - Applicable local Air Quality Management Jurisdictions (e.g., 403 SCAQMD).

- Because project authorizations are a federal undertaking, air quality standards for fugitive dust should exceed local standards and should be applied continuously seven days a week.
- Documentation for each project will require a detailed discussion and analysis of Ambient Air Quality conditions (baseline or existing), National Ambient Air Quality Standards, criteria pollutant nonattainment areas, and potential air quality impacts of the proposed project (including cumulative and indirect impacts). This content is necessary to disclose the potential impacts from temporary or cumulative degradation of air quality. The discussion will include a description and estimate of air emissions from potential construction and maintenance activities, and proposed mitigation measures to minimize net PM10 emissions. The documentation will specify the emission sources by pollutant from mobile sources, stationary sources, and ground disturbance. A Construction Emissions Mitigation Plan will be developed.
- Fugitive dust is the number one source of PM10 pollution in the Mojave and Sonoran Deserts. The proponent must model the sources of PM10 that occur prior to construction from the project area and show their timing, duration and transport on and off site of each source. Modeling will also identify how the generation and movement of PM10 will change during and after construction of the project under all alternatives.
- A fugitive Dust Control Plan will be developed.

II.3.2.3.2 Comprehensive Trails and Travel Management

Travel and transportation are an integral part of virtually every activity that occurs on public lands, including recreation, livestock grazing, and wildlife management, commodity resources management, ROWs to private inholdings, and public land management and monitoring. Comprehensive Travel and Transportation Management is the planning, management, and administration of motorized and non-motorized roads, primitive roads, and trails to ensure that public access, natural resources, and regulatory needs are considered. Two of the BLM's greatest management challenges are providing reasonable and varied routes for access to public lands and providing areas for a variety of motorized and non-motorized recreation, various landscapes, user interests, equipment options, weather conditions, transportation infrastructure, and resource constraints all must be considered.

II.3.2.3.2.1 Goals and Objectives

This alternative would not amend existing goals and objectives in the current land use plans. In addition to those goals and objectives, the DRECP would include the following goals and objectives:

- Provide reasonable, safe, and environmentally sound access to visitors, local residents, licensed and permitted activities, and property owners through coordination and collaboration on travel systems with other agencies, state and local governments and interested stakeholders.
- Through current and future Travel and Transportation Management Plans, provide a network of roads, primitive roads, and trails that serves the transportation needs for commercial, recreational, and casual uses of public lands while providing appropriate protection of natural and cultural resources. Designate Roads, Primitive Roads, and Trails to meet the regional goals and objectives:
    - Maintain network of roads, primitive roads, and trails to protect sensitive resources and provide for an acceptable level of health and safety risk given the type of use
    - Utilizes the latest best management practices for the construction, reconstruction or maintenance and adopts new best management practices as they emerge
    - Utilize route designations as developed in existing, and future, Travel Management Plans, including, but not limited to, CDCA, NEMO, WECO, WEMO Plans; and the Bakersfield and Bishop RMPs
- Protect road, primitive road and trail access to SRMAs, ERMAs, OHV Open Areas, Level 1, 2, and 3 Recreation Facilities, and Points of Interest as identified on Desert Access Guides and other Recreation Guides. (See also Section II.3.2.3.8.).

II.3.2.3.2.2 Components of a Designated Travel Network

In 2006, the BLM issued Instruction Memorandum No. 2006-173, which established policy for the use of terms and definitions associated with the management of transportation-related linear features. It also set a data standard and a method for storing electronic transportation asset data. According to the memorandum, all transportation assets are defined as follows:

- **Road:** A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use. These may include ROW roads granted by the BLM to other entities.

- **Primitive Road:** A linear route managed for use by four-wheel drive or high-clearance vehicles. These routes do not normally meet any BLM road design standards.
- **Trail:** A linear route managed for human-powered, stock, or OHV forms of transportation or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles.

Designated Roads, Primitive Roads, and Trails are categorized as follows:

- Tier 1: Roads and Primitive Roads with high values for commercial, recreational, casual uses, and/or to provide access to other recreation activities.
- Tier 2: Roads and Primitive Roads with high values for recreation and other motorized access (i.e., important through routes).
- Tier 3: Primitive Roads and Trails with high value for motorized and non-motorized recreational pursuits (i.e., spur routes).

II.3.2.3.2.3 Off-Highway Vehicle Management

OHVs are synonymous with off-road vehicles. As defined in 43 CFR, 8340.0-5 (a): Off-road vehicle means any motorized/battery-powered vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain.

In accordance with 43 CFR 8342.1, the BLM's regulations for OHV management, "the authorized officer shall designate all public lands as open, limited, or closed to [OHVs]." As such, all public lands within the Planning Area have been designated in one of three OHV designation categories, as follows:

- Open Area Designations are used for intensive OHV or other transportation use areas where there are no special restrictions or where there are no compelling resource protection needs, user conflicts, or public safety issues to warrant limiting cross-country travel.
- Limited Area Designations are used where travel must be restricted to meet specific resource/resource use objectives. For areas classified as limited, the BLM must consider a range of possibilities, including travel that will be limited to the following:
    - Types or modes of travel, such as foot, equestrian, bicycle, and motorized
    - Existing roads and trails
    - Time or season of use; limited to certain types of vehicles (OHVs, motorcycles, all-terrain vehicles, high clearance, etc.); limited to licensed or permitted vehicles or use

  - BLM administrative use only
  - Other types of limitations
- Closed Area Designations prohibit vehicular travel, both motorized and mechanized, transportation cross-country and on routes, except for where valid rights continue to allow access, such as within a designated Wilderness Area. Areas are designated closed if closure to all vehicular use is necessary to protect resources, promote visitor safety, or reduce use conflicts.

II.3.2.3.2.4 Back Country Byways Program

The BLM developed the Back County Byway Program to complement the National Scenic Byway Program established by the US Secretary of Transportation. Back County Byways highlight the spectacular nature of the western landscapes. These routes vary from narrow graded roads that are passable only during a few months of the year to two-lane paved highways with year-round access.

Comply with the policy and guidelines of the BLM Back Country Byway Program and intent to showcase routes with high scenic and outstanding natural, cultural, historic or other values consistent with the designation. Where appropriate and feasible, highlight the spectacular nature of the western landscapes through education and interpretation along linear travel routes which provide recreational driving opportunities that allow for the experiences of solitude and isolation by:

- Maintaining or improving access to BLM recreational destinations and activities.
- Helping meet the increasing demand for pleasure driving in back country environments.
- Facilitating effective partnerships at the local, state, and national levels.
- Contributing to local and regional economies through increased tourism.
- Increasing public awareness of the availability of outstanding recreation attractions on public lands.
- Enhancing the visitors' recreation experience and communicate the multiple-use management message through an effective wayside interpretive program.
- Increasing the visibility of BLM as a major supplier of outdoor recreation opportunities.
- Managing the increased use created through the program to minimize impacts to the environment.
- Contributing to the National Scenic Byways Program in a way that is uniquely suited to national public lands managed by BLM.

Types of Back Country Byways

Back country byways are designated by the type of road and the vehicle needed to safely travel the byway. Some back country byways vary from a single track bike trail to a low speed paved road that traverses back country areas. Segments of Back Country Byways are subdivided into four types based on the characteristic of the road.

Due to their remoteness, byway travelers should always inquire locally as to byway access and road conditions.

- **Type I –** Roads are paved or have an all-weather surface and have grades that are negotiable by 2-wheel drive vehicles and passenger cars. Most of these roads are narrow, slow speed, secondary routes though public lands.
- **Type II** – Roads that require high-clearance type vehicles such as trucks or 4-wheel drive vehicles. These roads are usually not paved, but may have some type of surfacing. Grades, curves, and road surface are such that they can be negotiated with a 2-wheel drive high clearance vehicle without undue difficulty.
- **Type III** – Roads require 4-wheel drive vehicles or other specialized vehicles such as dirt bikes, all-terrain vehicles (ATVs), etc. These roads are usually not surfaced, but are managed to provide for safety and resource protection needs. These roads can often have steep grades, uneven tread surfaces, and other characteristics that will require specialized vehicles to negotiate usually at slow speeds.
- **Type IV** – Trails are managed specifically to accommodate dirt bike, mountain bike, snowmobile or all-terrain vehicle use. Most of these routes are single track trails.

II.3.2.3.2.5 Conservation and Management Actions for the Entire Planning Area

- Maintaining and manage adequate Road, Primitive Road, and Trail Access to and within SRMAs, ERMAs, OHV Open Areas, and Level 1, 2, and 3
- Avoid large-scale disturbance within ½ mile from centerline of tier 2 Roads/Primitive Roads, and 300' from centerline of tier 3 primitive roads/trails. If avoidance of Tier 2 and 3 roads, primitive roads and trails is not practicable, relocate access to the same or higher standard and maintain the setting characteristics and access to recreation activities, facilities, destinations.
- Manage other significant linear features such as Mojave Road, Bradshaw Trail, or other recognized linear features to protect their important recreation activities, experiences and benefits. Prohibit large-scale disturbance within ½ mile (from centerline) of such linear features.

- If residual impacts to Tier 1 and Tier 2 roads/primitive roads, Back Country Byways, or significant linear features occur from adjacent DFAs or other large-scale disturbance, commensurate compensation in the form of enhanced recreation operations, access, recreation facilities or opportunities will be required.
- Manage OHV as per the appropriate Transportation and Travel Management Plan/RMP and/or the SRMA Objectives as outlined in Appendix L as Open, Limited or Closed.
- Manage Back Country Byways as a component of BLM Recreation and Travel and Transportation Management program.
- Manage Recreation Facilities consistent with the objectives for the recreation management areas and facilities (see also Section II.3.2.3.8).

II.3.2.3.2.6 Conservation and Management Actions in Development Focus Areas and DRECP Variance Lands, Future Assessment Areas, and Special Analysis Areas

- Avoid Tier 1, Tier 2, Tier 3 roads/primitive roads/trails, Backcountry Byways, and other significant linear features. If avoidance is not practicable, relocate access to the same or higher standard and maintain the recreation setting characteristics and access to recreation activities, facilities, and destination.
- If residual impacts to Tier 1 and Tier 2 roads/primitive roads/trails, Backcountry Byways, or other significant linear features cannot be protected and maintained, commensurate compensation in the form of an enhanced recreation operations, recreation facilities or opportunities will be required.

II.3.2.3.2.7 Conservation and Management Actions National Conservation Lands, Areas of Critical Environmental Concern, and Wildlife Allocations

- Refer to the individual National Conservation Lands/ACEC Special Unit Management Plans in Appendix L for specific objectives, management actions and allowable uses. Manage roads/trails consistent with National Conservation Lands/ACEC goals and objectives and as designated in Trails and Travel Management Plans (TTMPs) or Resource Management Plans (RMPs).

II.3.2.3.2.8 Conservation and Management Actions for Special Recreation Management Areas

- Refer to the individual SRMA documents for SRMA/Recreation Management Zone specific objectives, management actions, and allowable uses. Protect SRMAs for their unique/special recreation values. Manage roads/primitive roads/trails

consistent with SRMA objectives and as designated in Transportation and Travel Management Plan/RMPs.

II.3.2.3.3 Cultural Resources and Tribal Interests

The management of cultural resources on BLM land is done in compliance with several federal laws, including the Antiquities Act of 1906; the National Historic Preservation Act of 1966, as amended; the NEPA of 1969; EO 11593 "Protection and Enhancement of the Cultural Environment"; the FLPMA; the American Indian Religious Freedom Act of 1978; the Archaeological Resource Protection Act of 1979; the Native American Graves Protection and Repatriation Act of 1990; EO 13007, "Indian Sacred Sites"; and EO 13287, "Preserve America." Cultural resources are administered via the multiple-use mandate of FLPMA in six categories; scientific use, conservation, traditional use, public use, or experimental use. To balance this multiple-use mandate with the various compliance requirements, the BLM may impose safeguards against incompatible land and resource uses through withdrawals, stipulations on leases and permits, design requirements, and similar measures. These measures are developed and recommended by an appropriately staffed interdisciplinary team in accordance with policies described in the BLM Manual, Sections 8100 through 8170, and consistent with the statewide protocol with the California SHPO and other guidelines from the SHPO. This section provides the proposed general goals, objectives, and action items for the preferred alternative to manage cultural resources within the BLM jurisdiction in the DRECP consistent with these various requirements. Some Individual units (SRMA, ACEC, National Conservation Lands) also have additional specific and/or more restrictive cultural resource rules described in those sections.

II.3.2.3.3.1 Goals and Objectives

This alternative would not amend existing goals and objectives in the current land use plans. In addition to those goals and objectives, the DRECP would include the following goals and objectives:

Goals

- Identify, preserve, and protect significant cultural resources so that they are available for appropriate uses by present and future generations.
- Give full consideration to cultural resources in land use planning and management decisions by integrating cultural resources into a regional framework of information.
- Broaden the archaeological and historical knowledge of the DRECP through inventory efforts and the use of existing data to identify the full spectrum of cultural resources in the DRECP.

- Seek to reduce imminent threats to cultural resources and resolve potential conflicts from natural or human-caused deterioration, or potential conflict with other resource uses.
- Enhance public understanding and appreciation of cultural resources.
- Seek to increase public involvement in the monitoring and protection of cultural resources.
- Give full consideration to Native American knowledge and values in land use planning and management decisions, consistent with statute, regulation and policy.
- Take into account Native American values and concerns about places of religious and cultural importance to Native Americans in land use planning and management decisions, consistent with statute, regulation and policy.

Objectives

- Ensure management of cultural resources is consistent with agency responsibilities provided in Section 110 of the National Historic Preservation Act.
- Ensure federal actions that may affect historic properties are properly reviewed and considered consistent with the requirements of Section 106 of the National Historic Preservation Act.
- Ensure confidentiality of information about sensitive cultural resources consistent with Section 304 of the National Historic Preservation Act and Section 9 of the Archaeological Resources Protection Act.
- Manage evaluated cultural resources and those forecast to occur in the decision area within one or more of six cultural use allocations: scientific use; conserve for future use; traditional use; public use; experimental use; or discharged from use, as described in the BLM 8100 Manual.
- Cultural resources GIS data, including site locations and inventories, will be maintained and updated by each BLM field office cultural resource specialist according to established BLM standards in a cultural resource geodatabase.
- The cultural resources GIS data will be available to analyze known and predicted site sensitivity across the DRECP.
- Provide and encourage educational outreach, heritage tourism opportunities, and site stewardship programs that involve the public through partnerships and other means.
- Facilitate cultural resources research opportunities to contribute to the understanding of the ways humans have used and influenced natural systems and processes.

- BLM actions and authorizations will minimize inadvertent impacts on cultural resources including places of traditional cultural and religious importance to Native Americans.

In addition to the plan wide goals and objectives, the following goals and objectives apply to public lands in National Conservation Lands and ACECs.

Goals

- Ensure that management actions in non-cultural resource ACECs do not conflict with appropriate management of cultural resources in ACECs.
- Ensure that management actions for cultural resource ACECs are sufficiently tailored to address the unique circumstances of each individual ACEC.

Objectives

- Establish baseline resource information by identifying and documenting cultural resources.
- Identify threats to cultural resources.
- Monitor and protect resources.

II.3.2.3.3.2 Conservation and Management Actions

Conservation and Management Actions for the Entire Planning Area

- Continue working with the California Office of Historic Preservation to develop and implement a program for record keeping and tracking agency actions that meets the needs of BLM and OHP organizations pursuant to existing State and National agreements and regulation (BLM State Protocol Agreement; BLM National Programmatic Agreement).
- Using relevant archaeological and environmental data, identify priority geographic areas for new field inventory, based upon a probability for unrecorded significant resources and other considerations.
- Identify places of traditional cultural and religious importance to federally recognized tribes and maintain access to these locations for traditional use.
- Design BLM actions and authorizations to minimize impacts on cultural resources including places of traditional cultural and religious importance to federally recognized tribes.

- Develop interpretive material to correspond with recreational uses to educate the public about protecting cultural resources and avoiding disturbance of archaeological sites.
- Develop partnerships to assist in the training of groups and individuals to participate in site stewardship programs.
- Coordinate with visual resources staff to ensure VRM Classes consider cultural resources and tribal consultation to include landmarks of cultural significance to Native Americans (TCPs, trails, etc.).
- Conduct regular contact and consultation with federally recognized Tribes and individuals, consistent with statute, regulation and policy.
- Promote desert vegetation communities by compensatory mitigation, off-site mitigation, and other means for Native American vegetation collection.
- Promote and protect desert fan palm oasis communities by compensatory mitigation, off-site mitigation, and other means for Native American cultural values.
- Promote and protect desert microphyll woodland communities by compensatory mitigation, off-site mitigation, and other means for Native American cultural values.

Conservation and Management Actions in Development Focus Areas and Study Area Lands, and Transmission Corridors

The following CMAs will apply to renewable energy and transmission ROWs:

BLM developed and maintains a geodatabase for Cultural Resources and Cultural Resources investigations in a GIS. The geodatabase is regularly updated with newly recorded and re-recorded resource and investigation data. However, while the geodatabase includes location information (feature classes or shapefiles), the associated information about each resource or investigation (attribute data) is limited or inconsistent. As it exists now, the geodatabase cannot be used for predictive analyses like those recommended in *A Strategy for Improving Mitigation Policies and Practices of the Department of the Interior* (DOI 2014). However, with some updates, the geodatabase would be a powerful tool for identifying potential conservation priorities as well as development opportunities. Many of the CMAs below are intended to facilitate the update of BLM's geodatabase, and require its use when the updates are complete.

- Require the applicant to pay all appropriate costs associated with the following processes, through the appropriate BLM funding mechanism:
    - All appropriate costs associated with the BLM's analysis of the DRECP geodatabase and other sources for cultural resources sensitivity;

  - All appropriate costs associated with preliminary sensitivity analysis;
  - All appropriate costs associated with the Section 106 process including the identification and defining of cultural resources. These costs may also include logistical, travel, and other support costs incurred by tribes in the consultation process.
  - All appropriate costs associated with updating the DRECP cultural resources geodatabase with project specific results.
- A management fee, defined at a per acre rate and annual escalation provision for the life of the grant, will paid to the BLM as partial mitigation for the cumulative effects on cultural resources across the Plan Area and may be used to develop regional research designs and other forms of off-site and compensatory mitigation.
- The management fee rate will be determined through the programmatic Section 106 consultation process that will be completed as part of the DRECP land use plan amendment.
- Demonstrate that results of cultural resources sensitivity, based on the DRECP geodatabase, and other sources, are used as part of the initial planning pre-application process and to select of specific footprints for further consideration.
- Provide a statistically significant sample survey as part of the pre-application process, unless the BLM determines the DRECP geodatabase and other sources are adequate to assess cultural resources sensitivity of specific footprints.
- Provide justification in the application why the project considerations merit moving forward if the specific footprint lies within an area identified or forecast as sensitive for cultural resources by the BLM.
- Complete the Section 106 Process as specified in 36 CFR Part 800, or via an alternate procedure, allowed for under 36 CFR Part 800.14 prior to issuing a ROD or ROW grant on any utility-scale renewable energy or transmission project. For utility-scale solar energy developments, the BLM may follow the Solar PA.
- The Ford Dry Lake Basin and surrounding shoreline up to the 380 foot contour comprises mitigation agreed upon earlier by the Genesis project owners, the BLM, the CEC, the Colorado River Indian Tribes, and the Ft. Mojave tribe as the proposed Ford Dry Lake National Register Archaeological District and may not be developed.

Conservation and Management Actions for National Conservation Lands and Areas of Critical Environmental Concern

- Survey, identify and record new cultural resources within ACEC boundaries.
- Update records for existing cultural resources within ACECs.

- Develop baseline assessment of specific natural and man-made threats to cultural resources in ACECs (i.e., erosion, looting and vandalism, grazing, OHV).
- Provide on-going monitoring for cultural resources based on the threat assessment.
- Identify, develop or incorporate standard protection measures and best management practices to address threats.
- Where specific threats are identified, implement protection measures consistent with agency Section 106 responsibilities.

II.3.2.3.4 Lands and Realty

This section provides guidelines on land tenure actions and the evaluation of land use authorizations within the Planning Area. These guidelines are intended to allow BLM to dispose of and acquire lands to meet plan objectives, and allow for the permitting of ROWs in suitable locations.

II.3.2.3.4.1 Goals and Objectives

This alternative would not amend existing goals and objectives in the current land use plans. In addition to those goals and objectives, the DRECP would include the following goals and objectives:

- Continue implementing a land exchange program with the State of California, to be utilized for the dual purposes of renewable energy development and land conservation.
- Identify BLM lands available for exchange and sale in each land classification.
- Apply limitations to the development of large-scale ROWs in areas identified for conservation (National Conservation Lands, ACEC and SRMAs).

II.3.2.3.4.2 Conservation and Management Actions

Conservation and Management Actions for the Entire Planning Area

- Identify donated or acquired lands as exclusion areas when development is incompatible with deed restrictions.
- Allow development of acquired lands at the discretion of the CA State Director.
- Process use authorization applications within National Trail Management Corridors in accordance with the management prescriptions outlined for trail corridors in this plan.
- Acquire lands within conservation areas identified by this plan, prioritizing the acquisition of lands within NLCS (National Conservation Lands) designated areas.

Acquisition parcels should be within or adjacent to an identified conservation area and would be managed according to the conservation management requirements for the conservation area.

- The MUCs used to determine land tenure in the CDCA Plan will be replaced by areas listed in the CMAs below.
- In non-designated lands (i.e. lands not covered by the specific CMAs below), make lands available for disposal through exchange or land sale.
- Any actions on Catellus Agreement lands will be consistent with deed restrictions.
- Any actions on Catellus Agreement lands will be subject to the approval of the California State Director.

Exchanges with the State of California

- Continue land exchanges with the State of California as described in the CDCA Plan in the Goals and Objectives section above.
- Enter into land exchanges with the California State Lands Commission (CSLC) which convey BLM lands suitable for, or developed as, large-scale renewable energy related projects in exchange for CSLC school lands located in and adjacent to designated conservation areas. These exchanges will follow the procedures outlined in Memorandum of Agreement Relating to Land Exchanges to Consolidate Land Parcels signed by the BLM and CSLC on May 21, 2012.
- Prioritize land exchange proposals from the CSLC on available lands if there are competing land tenure proposals (e.g. land sale or exchange), CSLC proposals that enhance revenues for schools will generally be given priority.

Conservation and Management Actions in Development Focus Areas and Study Area Lands

- Make lands within DFAs available for disposal by sale or exchange under Section 203(a)(1), 203(a)(3), 206 and 209 of FLPMA.
- Allow development of acquired lands within DFAs at the discretion of the CA State Director unless development is incompatible with applicable deed restrictions.
- Segregate lands proposed for exchange in DFAs from the public land laws for 5 years, but allow for wind, solar, transmission or geothermal applications and their associated facilities.
- Review withdrawn lands in DFAs upon receipt of a ROW application and if appropriate modify to allow for issuance of ROW grants.

- Cost recovery funding used to process a ROW application may be used to adjudicate and remedy any conflicting land withdrawals, if necessary.
- Make public lands in DFAs available for selection by the CSLC in lieu of base lands within DFAs. Base lands are School Lands the State of California was entitled to but did not receive title to due to prior existing encumbrances.
- If lands currently classified as Future Assessment Areas (FAAs) become designated as DFAs through a plan amendment, they will be made available for disposal through exchange and land sales through the authorities indicated above.
- In Study Area Lands, make lands available for disposal by exchange, but unavailable for disposal by land sale.

Conservation and Management Actions in National Conservation Lands

- Renewable energy projects and related ancillary facilities are not allowed.
- Avoid use authorizations that would negatively affect the values for with the National Conservation Lands are designated, unless mitigation or compensation would result in a net-benefit to the National Conservation Lands. Development would be limited to 1% of total authorized disturbance, or to the level allowed by a collocated ACEC or Wildlife Allocation, whichever is more restrictive.
- Public access will be designed to facilitate or enhance the use, enjoyment, conservation, protection, and restoration of National Conservation Land values identified for the subregion.
- Acquire lands through exchange, purchase, or donation in accordance with the CMAs outlined for National Conservation Lands.
- Make lands available for disposal through exchange if it results in a net benefit to the values of National Conservation Lands.

Conservation and Management Actions in Areas of Critical Environmental Concern

- Renewable energy and ancillary facilities are not allowed in ACECs.
- Use authorization applications will be evaluated in accordance with allowable uses identified in the ACEC worksheets in this plan.
- Land use authorizations are not to exceed the disturbance cap, if such a cap has been established in the worksheets for the ACEC.
- Acquire lands through exchange, purchase, or donation.
- Make lands available for disposal through exchange if it results in a net benefit to the values of the ACEC.

Conservation and Management Actions in Wildlife Allocations

- Renewable energy projects and related ancillary facilities are not allowed.
- Applications for use authorizations that provide a benefit to the management area or serve public interests may be allowed, unless prohibited by statute.
- Acquire lands through exchange, purchase, or donation.
- Make lands unavailable for disposal.

Conservation and Management Actions in Special Recreation Management Areas

- Renewable energy projects and related ancillary facilities are not allowed. Two exceptions to this management action are (1) geothermal development would be an allowable use if a geothermal-only DFA overlays the SRMA and the lease includes a no surface occupancy stipulation, and (2) if a DRECP Variance Land designation overlays the SRMA, renewable energy may be allowed on a case-by-case basis if the proposed project is found to be compatible with the specific SRMA values.
- Land use authorizations must be consistent with the specific CMAs developed for each SRMA.
- Acquire lands through exchange, purchase, or donation.
- Lands are available for disposal to parties that will manage the land in accordance with the recreational values of the SRMA.

II.3.2.3.5 Livestock Grazing

The BLM within the State of California manages 572 permits/leases on 699 grazing allotments scattered over 8.1 million acres. These permits/leases represent approximately 525,000 animal unit months of forage for livestock. The Plan Area touches approximately 61 allotments over a total land base of 3,120,393 acres.

These domestic livestock are managed under the Taylor Grazing Act of 1934, NEPA, ESA, FLPMA, and Public Rangelands Improvement Act of 1978. Within the CFR Part 4100 are specific guidance for administration of grazing on the public lands.

In managing livestock grazing on public rangelands, the BLM's overall objective is to ensure the long-term health and productivity of these lands and to create multiple environmental benefits that result from healthy watersheds. The BLM manages livestock grazing in a manner aimed at achieving and maintaining public land health. To achieve desired conditions, the agency uses rangeland health standards and guidelines, which the BLM developed in the 1990s with input from citizen-based Resource Advisory Councils across the West.

Livestock grazing now competes with more uses than it did in the past, as other industries and the general public look to the public lands as sources of both conventional and renewable energy and as places for outdoor recreation opportunities, including OHV use.

II.3.2.3.5.1 Goals and Objectives

This alternative would not amend existing goals and objectives in the current land use plans.

II.3.2.3.5.2 Conservation and Management Actions

CMAs for livestock grazing on BLM-administered lands are outlined in Appendix H, and include actions that apply to project-specific activities. The BLM CMAs for grazing include proposed standards of rangeland health and guidelines for grazing management within the California Desert District allotments (Bishop and Bakersfield have approved standards and guidelines in place and are not modified by the DRECP). The grazing regulations found at 43 CFR 4110.4-2(b) describe the process of devoting parts or all of a grazing allotment to another purpose and providing the permittees and lessees a 2-year notification. Relinquishment of grazing permits and leases falls under the 2012 Appropriations Act (Public Law 112-74) and provides policy whereby permittees and lessees can donate their permits and leases back to the Bureau of Land Management for permanent relinquishment through the Land Use Planning process. Grazing allotments that were voluntarily relinquished prior to fiscal year 2012 would be identified in the DRECP as permanently unavailable for grazing.

Standards of Rangeland Health and Guidelines for Grazing Management

Regional Public Land Health Standards and Guidelines are required for all BLM administered lands in accordance with Part 43 of the CFR subsection 4180. These regulations require that State Directors, in consultation with Resource Advisory Councils, develop Standards for Rangeland Health and Guidelines for grazing management.

The BLM in coordination and consultation with the California Desert District Advisory Committee (see Section 601 of the FLPMA as amended) developed standards and guidelines for the CDCA and used the following land use plan amendments to analyze the specific standard and guideline and to provide the public and opportunity to comment.

- Northern and Eastern Colorado Desert Management Plan—NECO—ROD signed Dec. 2002 (BLM 2002a)
- Northern and Eastern Mojave Desert Management Plan—NEMO—ROD signed Dec. 2002 (BLM 2002b)
- West Mojave Plan—WEMO—ROD signed March 2006 (BLM 2006)

The regulations require approval by the Secretary of the Interior prior to full implementation of standards and guidelines. Until approval is received, the fallback standards and guidelines will be used.

The regulations require approval by the Secretary of the Interior prior to full implementation of the CDD standards and guidelines. Until approval is received, the fallback standards and guidelines will be used in the 5 Desert District Offices.

Bakersfield and Bishop Field Offices are covered under the Central California Standards and Guidelines and require no additional approval to continue to use that document.

Standards and Guidelines for the California Desert District

Standards of land health are expressions of levels of physical and biological condition or degree of function required for healthy lands and sustainable uses, and define minimum resource conditions that must be achieved and sustained. (H-4180-1 Rangeland Health Standards)

Guideline. A practice, method or technique determined to be appropriate to ensure that standards can be met or that significant progress can be made toward meeting the standard. Guidelines are tools such as grazing systems, vegetative treatments, or improvement projects that help managers and permittees achieve standards. Guidelines may be adapted or modified when monitoring or other information indicates the guideline is not effective, or a better means of achieving the applicable standard becomes appropriate. (H-4180-1 Rangeland Health Standards)

The following **Standards** for the CDCA (applies to all BLM administered lands within the DRECP portion of the CDCA) from the NECO, NEMO, WEMO, and PSSCRMP land use plan amendments.

Soils

Soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, geology, land form, and past uses. Adequate infiltration and permeability of soils allow accumulation of soil moisture necessary for optimal plant growth and vigor, and provide a stable watershed, as indicated by:

- Canopy and ground cover are appropriate for the site.
- There is a diversity of plant species with a variety of root depths.
- Litter and soil organic matter are present at suitable sites.
- Microbiotic soil crusts are maintained and in place at appropriate locations.

- Evidence of wind or water erosion does not exceed natural rates for the site.
- Soil permeability, nutrient cycling, and water infiltration are appropriate for the soil type.

Native Species

Healthy, productive, and diverse habitats for native species, including special status species (federal threatened and endangered, federally proposed, federal candidates, BLM sensitive, or California State threatened and endangered, and Unique Plant Assemblages), are maintained in places of natural occurrence, as indicated by:

- Photosynthetic and ecological processes are continuing at levels suitable for the site, season, and precipitation regimes.
- Plant vigor, nutrient cycle, and energy flow are maintaining desirable plants and ensuring reproduction and recruitment.
- Plant communities are producing litter within acceptable limits.
- Age class distribution of plants and animals are sufficient to overcome mortality fluctuations.
- Distribution and cover of plant species and their habitats allow for reproduction and recovery from localized catastrophic events.
- Alien and noxious plants and wildlife do not dominate a site or do not require action to prevent the spread and introduction of noxious/invasive weeds.
- Appropriate natural disturbances are evident.
- Populations and their habitats are sufficiently distributed and healthy to prevent the need for new listing as special status species.

Riparian/Wetland and Stream Function

Wetland systems associated with subsurface, running, and standing water function properly and have the ability to recover from major disturbances. Hydrologic conditions are maintained, as indicated by:

- Vegetative cover adequately protects banks and dissipates energy during peak water flows.
- Dominant vegetation is an appropriate mixture of vigorous riparian species.
- Recruitment of preferred species is adequate to sustain the plant community.
- Stable soils store and release water slowly.

- Plant species present indicate soil moisture characteristics are being maintained.
- There is minimal cover of shallow-rooted invader species, and they are not displacing deep-rooted native species.
- Shading of stream courses and water courses is sufficient to support riparian vertebrates and invertebrates.
- Stream is in balance with water and sediment being supplied by the watershed.
- Stream channel size (depth and width) and meander is appropriate for soils, geology, and landscape.
- Adequate organic matter (litter and standing dead plant material) is present to protect the site from excessive erosion and to replenish soil nutrients through decomposition.

Water Quality

Surface and groundwater complies with objectives of the Clean Water Act and other applicable water quality requirements, including meeting the California State standards, as indicated by:

- The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen.
- Standards are achieved for riparian, wetlands, and water bodies.
- Aquatic organisms and plants (e.g., macro-invertebrates, fish, algae, and plants) indicate support for beneficial uses.
- Monitoring results or other data show water quality is meting the Standard.

The following **Guidelines** for grazing in the CDCA (applies to all BLM administered lands within the DRECP portion of the CDCA) from the NECO, NEMO, WEMO, and PSSCRMP land use plan amendments.

- Facilities will be located away from riparian-wetland areas whenever they conflict with achieving or maintaining riparian-wetland functions.
- The development of springs and seeps or other projects affecting water and associated resources will be designed to protect the ecological functions and processes of those sites.
- Grazing activities at an existing range improvement that conflict with achieving proper functioning conditions (PFC) and resource objectives for wetland systems (lentic, lotic, springs, addits, and seeps) would be modified so PFC and resource

objectives can be met, and incompatible projects would be modified to bring them into compliance. The BLM would consult, cooperate, and coordinate with affected interests and livestock producers prior to authorizing modification of existing projects and initiation of new projects. New range improvement facilities would be located away from wetland systems if they conflict with achieving or maintaining PFC and resource objectives.

- Supplements (e.g., salt licks) will be located one-quarter mile or more away from wetland systems so they do not conflict with maintaining riparian-wetland functions.
- Management practices will maintain or promote perennial stream channel morphology (e.g., gradient, width/depth ratio, channel roughness, and sinuosity) and functions that are appropriate to climate and landform.
- Grazing management practices will meet state and federal water quality Standards. Impoundments (stock ponds) having a sustained discharge yield of less than 200 gallons per day to surface or groundwater, are excepted from meeting state drinking water standards per California State Water Resources Control Board Resolution Number 88-63.
- In the CDCA all wildfires in grazing allotments will be suppressed. However, to restore degraded habitats infested with invasive weeds (e.g., tamarisk), prescribed burning may be used as a tool for restoration. Prescribed burns may be used as a management tool where fire is a natural part of the regime.
- In years when weather results in extraordinary conditions, seed germination, seedling establishment, and native plant species growth should be allowed by modifying grazing use.
- Grazing on designated ephemeral rangeland could be allowed only if reliable estimates of production have been made, an identified level of annual growth or residue to remain on site at the end of the grazing season has been established, and adverse effects on perennial species are avoided.
- During prolonged drought, range stocking will be reduced to achieve resource objectives and/or prescribed perennial forage utilization. Livestock utilization of key perennial species on year-long allotments should be checked about March 1 when the Palmer Severity Drought Index/Standardized Precipitation Index indicates dry conditions are expected to continue.
- Through the assessment process or monitoring efforts, the extent of invasive and/or exotic plants and animals should be recorded and evaluated for future control measures. Methods and prescriptions should be implemented, and an evaluation would be completed to ascertain future control measures for undesirable species.

- Restore, maintain or enhance habitats to assist in the recovery of federally listed threatened and endangered species. Restore, maintain or enhance habitats of special-status species including federally proposed, federal candidates, BLM sensitive, or California State threatened and endangered to promote their conservation.
- Grazing activities should support biological diversity across the landscape, and native species and microbiotic crusts are to be maintained.
- Experimental research efforts should be encouraged to provide answers to grazing management and related resource concerns through cooperative and collaborative efforts with outside agencies, groups, and entities.
- Livestock utilization limits of key perennial species will be as shown in (see Table II.3-49) for the various range types.

Table II.3-49
Livestock Utilization Limits of Key Perennial Species

Range Type	Percent Use of Key Perennial Species	
	Poor-Fair range condition or growing season	*Good-Excellent range condition or dormant season*
Mojave Sonoran Desert scrub	25	40
Salt Desert shrub land	25	35
Semi-desert grass and shrub land	30	40
Sagebrush grassland	30	40
Mountain shrub land	30	40

Monitoring

Monitoring of grazing allotment resource conditions would be routinely assessed to determine if Public Land Health Standards are being met. In those areas not meeting one or more Standards, monitoring processes would be established where none exist to monitor indicators of health until the Standard or resource objective has been attained. Livestock trail networks, grazed plants, livestock facilities, and animal waste are expected impacts in all grazing allotments and these ongoing impacts would be considered during analysis of the assessment and monitoring process. Activity plans for other uses or resources that overlap an allotment could have prescribed resource objectives that may further constrain grazing activities (e.g., ACEC). In an area where a Standard has not been met, the results from monitoring changes to grazing management required to meet Standards would be reviewed annually. During the final phase of the assessment process, the Range Determination includes the schedule for the next assessment of resource conditions. To

attain Standards and resource objectives, the best science would be used to determine appropriate grazing management actions. Cooperative funding and assistance from other agencies, individuals, and groups would be sought to collect prescribed monitoring data for indicators of each Standard.

Conservation and Management Actions for the Entire Planning Area

- In the CDCA Plan area only, accept grazing permit/lease donations in accordance with legislation in the Fiscal Year 2012 Appropriations Act (Public Law 112-74).
- Outside of the CDCA Plan area, determine whether special status species would benefit from making allotments unavailable to domestic livestock grazing in the event that the permit/lease is relinquished.
- If the BLM determines that grazing is to be removed from an authorized grazing allotment, provide the grazing permittee/lessee a two-year notification as outlined in the Grazing Regulations found at 43 CFR 4110.4-2(b) and WO IM 2011-181 (BLM 2011).
- For grazing allotments that BLM has received a voluntary request for relinquishment prior to fiscal year 2012, continue the planning process for making these allotments unavailable for grazing.
- Complete the process for approving rangeland health standards and guidelines for the remaining portions of the CDCA planning area (NEMO, WEMO, NECO).
- Make Pilot Knob, Valley View, Cady Mountain, Cronese Lake, and Harper Lake allotments, allocations unavailable for livestock grazing and change to management for wildlife conservation and ecosystem function. Reallocate the forage previously allocated to grazing use in these allotments to wildlife and ecosystem functions. Pilot Knob was closed in the WEMO plan amendment. The Cronese Lake, Harper Lake, and Cady Mountain allotments were closed as mitigation for the impacts to the Agassiz's desert tortoise resulting from the Fort Irwin expansion. All forage allocated to livestock grazing in these allotments will be reallocated to wildlife use and ecosystem function. The vegetation in the Valley View Allotment, which was previously allocated to livestock, will be reallocated to wildlife use and ecosystem function.
- The following vacant grazing allotments within the CDCA will have all vegetation previously allocated to grazing use reallocated to wildlife use and ecosystem functions and will be closed and unavailable to future livestock grazing: Buckhorn Canyon, Crescent Peak, Double Mountain, Jean Lake, Johnson Valley, Kessler Springs, Oak Creek, Chemehuevi Valley, and Piute Valley.

- Allocate the forage that was allocated to livestock use in the Lava Mountain and Walker Pass Desert allotments (which have already been relinquished under the 2012 Appropriations Act) to wildlife use and ecosystem function and permanently eliminate livestock grazing on the allotments.
- Avoid siting solar developments in active livestock grazing allotments. If a ROW is granted for solar development in an active livestock grazing allotment, prior to solar projects being constructed in active livestock allotments, an agreement must be reached with the grazing permittee/lessee on the 2-year notification requirements. If any rangeland improvements such as, but not limited to, fences, corrals, or water storage projects, are to be impacted by energy projects, reach agreement with the BLM and the grazing permittee/lessee on moving or replacing the range improvement. This includes the costs for NEPA, clearances, and materials.
- In California Condor use areas, wind energy ROWs will include a term and condition requiring the permittee and wind operator to eliminate grazing of livestock.
- Include no surface occupancy stipulation on geothermal leases in active grazing allotments.

II.3.2.3.6 Minerals

The lands within the DRECP contain a vast array of minerals that are vital to the local and national economy. Precious metals such as gold and silver abound in many areas, while Rare Earth Elements, critical components to an ever expanding electronic world, are found principally in just one small area near Mountain Pass. Dry lake beds within the DRECP contain borates and other minerals that help drive the industrial engine of this country. High grade limestone for cement and fillers, and sand and gravel deposits, while fairly ubiquitous, literally form the very foundation of civilization. In this light, it is important that we have access to these resources for now and future generations to come.

II.3.2.3.6.1 Goals and Objectives

This alternative would not amend existing goals and objectives in the current land use plans. In addition to those goals and objectives, the DRECP would include the following goals and objectives:

- Support the national need for a reliable and sustainable domestic mineral and energy supply.
- Support responsible mining and energy development operations necessary for California's infrastructure, commerce and economic well-being.

II.3.2.3.6.2 Conservation and Management Actions

Conservation and Management Actions for the Entire Planning Area

For identified minerals lands and existing mining and energy development (locatable, salable, solid leasable and geothermal minerals) with currently approved Plans of Operations, Notices, Mine and Reclamation Plans or Plans of Development, under the authorities 43 CFR 3200; 3500; 3600; and 3802/09, the mineral resources have been characterized in the following manner in proposed DFAs and Conservation Areas:

High Potential Mineral Areas (identified in CA GEM data)

- These areas have been identified as mineral lands having existing and/or historic mining activity and a reasonable probability of future mineral resource development. These identified areas will be designated as mineral land polygons on DRECP maps, recognized as probable future development areas for planning purposes and allowable use areas.
- If a renewable energy project is proposed in a High Potential Mineral Area, analyze and consider the mineral resource value in the renewable energy project analysis.

Existing Mineral/Energy Operations

- Existing authorized mineral/energy operations, including amendments and requests for expansion on existing operations, will be designated as an allowable use within areas all BLM lands in the Planning Area and unpatented mining claims are subject to valid existing rights.

Existing High Priority Mineral/Energy Operations Exclusion Areas

- Existing high priority operation footprints and their identified expansion areas will be excluded from proposed renewable energy and conservation applications.
- High priority operation exclusions are referenced by name with their respective footprint (acreage) below.
- MolyCorp REE (General Legal Description: 35º 26'N; 115º 29'W)- 10,490.9 surface acres
- Briggs Au, Etna (General Legal Description: 35º 56'N; 117º 11'W)- 3,216.9 surface acres
- Cadiz Evaporites (General Legal Description: 34º 17'N; 115º 23'W)- 2,591.5 surface acres

- Searles Dry Lake (Evaporate) Operation (General Legal Description: 35º 43'N; 117º 19'W)- 72,000 surface acres
- Bristol Dry Lake (Evaporate) Operation (General Legal Description: 34º 29'N; 115º 43'W)- 3,500 surface acres
- Mesquite Gold Mine (General Legal Description: 33º 04'N; 114º 59'W)- 4,500 surface acres
- Hector Mine (Hectorite Clay) (General Legal Description: 34º 45'N; 116º 25'W)- 1,500 surface acres

Access to Existing Operations

- Established access routes to the aforementioned existing authorized operations and areas will be designated as allowable uses within the proposed DFA and conservation area designations.

Areas Located Outside Identified Mineral Areas ("White Areas")

- Areas which could not be characterized due to insufficient data and mineral potential may fluctuate dependent on market economy, extraction technology, and other geologic information- requiring periodic updating.

Conservation and Management Actions in National Conservation Lands and Areas of Critical Environmental Concerns

- In National Conservation Lands, apply the CMAs outlined in Section II.3.2.2.1.1.

High Potential Mineral Areas

- In National Conservation Lands and ACECs, determine if reasonable alternatives exist outside of the National Conservation Lands/ACEC areas prior to proposing mineral resource development within one of these areas.
- In National Conservation Lands, subject to valid existing rights, if mineral resource development is proposed on a parcel of public land administered by the BLM for conservation purposes and designated as part of the NLCS within the CDCA, pursuant to OPLMA Section 2002(b)(2)(D):
    - Identify, analyze, and consider the resources and values for which that parcel of public land is administered for conservation purposes.
    - Determine whether development of mineral resources is compatible with the BLM's administration of that parcel of public land for conservation purposes. If

development is incompatible, the mineral resource would not be developed, subject to valid existing rights.

- In National Conservation Lands, to protect the values for which a National Conservation Land unit was designated, and avoid, minimize, and mitigate impacts to those values, all Plans of Operation will meet the performance standards found at 43 CFR 3809.420, specifically 43 CFR 3809.420(a)(3)—Land-use plans; and 43 CFR 3809.420(b)(7)—Fisheries, wildlife and plant habitat.

II.3.2.3.7 Paleontology

Paleontological resources found on public lands are recognized by BLM as constituting a fragile and nonrenewable scientific record of the history of life on earth and represent an important component of America's natural heritage. BLM manages paleontological resources under the following laws, regulations and policies: BLM Manual 8270, Paleontological Resources Management; BLM Handbook 8270-1, General Procedural Guidance for Paleontological Resources Management; the FLPMA; NEPA; Secretarial Order 3104; the Federal Cave Resources Protection Act of 1988; Archaeological Resources Protection Act of 1979; Antiquities Act of 1906; and other various laws and regulations. This section provides the proposed goals, objectives, and action items for the preferred alternative to manage paleontological resources within the BLM's jurisdiction in the DRECP consistent with these various requirements. Some individual units (SRMA, ACEC, National Conservation Lands) also have additional resource specific and/or more restrictive paleontological resource rules described in those sections.

II.3.2.3.7.1 Goals and Objectives

This alternative would not amend existing goals and objectives in the current land use plans. In addition to those goals and objectives, the DRECP would include the following goals and objectives:

Goals

- Ensure that paleontological resources are given full consideration in land use planning and in management decisions.
- Preserve and protect a representative sample of the full array of the paleontological resources in the DRECP.
- Protect and conserve significant paleontological resources as they are discovered on public lands.
- Manage paleontological resources in ways that prioritize research needs, facilitate educational and recreational needs, and protect important sites.

- Develop specific objectives and management actions for fossil localities, when paleontological resources are discovered in the Planning Area.

Objectives

- Identify sensitive paleontological localities to aid in the project review and design process.
- Develop interpretive materials to correspond with recreational uses to educate public about protecting paleontological resources and avoiding disturbance of sensitive paleontological localities.

II.3.2.3.7.2 Conservation and Management Actions

The following CMAs will apply to the entire Planning Area.

- If not previously available, prepare paleontological sensitivity maps consistent with the Potential Fossil Yield Classification for ROW prior to NEPA analysis.
- Incorporate all guidance provided by the Paleontological Resources Protection Act.
- Ensure proper data recovery of significant paleontological resources where adverse impacts cannot be avoided or otherwise mitigated.
- Due to recent significant discoveries in areas within the Chuckwalla Valley where previous assessments had predicted low sensitivity, require paleontological surveys and construction monitors for large scale projects.

II.3.2.3.8 Recreation and Visitor Services

Visitation to the Planning Area is associated with motorized camping, OHV recreation, hunting, hiking, wildflower and wildlife viewing, bird watching, photography, and commercial uses also occur to a lesser degree. As such, the majority of public lands within the Planning Area have recreation opportunities that can be appropriately managed while conserving natural, biological, and cultural resources as prescribed by the BLM's multiple-use mission and planning documents.

This recreation and visitor services blueprint (based on the BLM National Recreation and Visitor Services program) for the future also sets three primary goals for the BLM recreation program:

1. Improve access to appropriate recreation opportunities on BLM-managed lands.
2. Ensure a quality experience and enjoyment of natural, biological, and cultural resources on BLM-managed lands.

3. Provide for and receive fair value in recreation.

To meet the specific needs and changing demands of recreation visitors and changes in BLM recreation management, a BLM California-specific Recreation and Visitor Services Strategy was completed in 2008 (BLM 2008b). The strategy outlined a framework with specific goals, objectives, and actions to be implemented. The three primary goals of the document were designed to increase public land stewardship through consistent and coordinated management of the BLM California recreation program in order to achieve the best possible balance of recreational uses and land health standards statewide.

The three primary goals are to:

1. Set a framework for achieving sustainable experiences and quality of life outcomes for individuals, communities, and the environment.
2. Sustain diversity, distinctive character, and capacity of BLM recreation settings.
3. Increase the economic stability and sustainability of the BLM California recreation program.

The seven main objectives for BLM recreation management in California are to:

1. Manage for recreation experiences and quality of life.
2. Encourage sustainable travel/tourism collaborations.
3. Fair value and return through fees and commercial services.
4. Establish a comprehensive approach to travel management.
5. Public health and safety and improve accessibility.
6. Enhance and expand visitor services.
7. Encourage and sustain collaborative partnerships.

II.3.2.3.8.1 Goals and Objectives

- **Special Recreation Management Areas (SRMA).** Protect SRMAs for their unique/special recreation values. Manage SRMAs for their targeted recreation activities, experiences and benefits. Maintain (and where possible enhance) the recreation setting characteristics – physical components of remoteness, naturalness and facilities; social components of contact, group size and evidence of use; and operational components of access, visitor services and management controls (refer to recreation setting characteristics matrix). Refer to the individual SRMA documents for SRMA/Recreation Management Zone specific objectives, management actions, and allowable uses.

- **Extensive Recreation Management Area (ERMA).** Support and sustain the principal recreation activities and associated qualities and conditions of the ERMA. Manage ERMAs to address the recreation use, demand, or recreation and visitor services program investments. Refer to the individual ERMA documents for ERMA specific objectives, management actions, and allowable uses.
- Manage lands not designated as SRMAs or ERMAs to meet recreation and visitor services and resource stewardship needs as identified in field office Resource Management Plans. Recreation activities may occur and recreation facilities may exist in these areas.
- **Designated OHV Open Areas.** Protect vehicle access and OHV opportunities as specified in Recreation Area Management Plans and Travel and Transportation Management Plans.
- **Developed Recreation Facilities (BLM FAMS data).** Protect and manage developed recreation facilities within the Planning Area.
    - Level 1 = high value: Campgrounds, Long-Term Visitor Areas, Visitor Contact Facilities, Day Use areas, Watchable Wildlife areas, OHV Open Areas, etc.
    - Level 2 = moderate value: Recreational Trailheads for motorized/non-motorized activities, Parking staging areas
    - Level 3 = lower value: Individual developments—Kiosks, etc.
- Manage the remainder of the non-SRMA resource area within the Planning Area to provide for a variety of dispersed recreation opportunities. Emphasize primitive, semi primitive motorized, semi primitive nonmotorized and roaded natural experiences. Maintain and enhance semi-primitive and other physical settings by providing compatible recreation opportunities within those settings. Manage visitor use to conform with semi-primitive and other physical settings. Recreation management may include developing trails for hiking, mountain biking and horseback riding; providing OHV use opportunities; designating scenic byways; interpreting natural and cultural resources; and establishing an environmental education program.
- Enhance recreation experiences provided to the public through a well-managed Special Recreation Permit program. The Special Recreation Permit program promotes a broad spectrum of recreational experiences that are appropriate to the recreation management setting.

Goals and Objectives Specific to the Bishop RMP

- Manage the Alabama Hills National Scenic Cooperative Management Area to conserve, protect, and enhance for the benefit and enjoyment of present and future

generations the nationally significant scenic, cultural, recreational, geological, educational, biological, and scientific resources of the Alabama Hills.

II.3.2.3.8.2 Conservation and Management Actions

Conservation and Management Actions for the Entire Planning Area

- Maintain, and where possible enhance, the recreation setting characteristics – physical components of remoteness, naturalness and facilities; social components of contact, group size and evidence of use; and operational components of access, visitor services and management controls.
- Cooperate with the network of communities and recreation service providers active within the planning area to protect the principal recreation activities and opportunities, and the associated conditions for quality ~~of~~ recreation, by enhancing appropriate visitor services, and by identifying and mitigating impacts from development, inconsistent land uses and unsustainable recreation practices.
- Manage lands not designated as SRMAs or ERMAs to meet recreation and visitor services and resource stewardship needs as described in Resource Management Plans.
- Prohibit large-scale ground disturbing activities that do not enhance conservation and recreation values within one mile of Level 1 and Level 2 Recreation facility footprint.
- Avoid large-scale ground disturbance within one-half mile of Level 3 Recreation facility footprint. If avoidance isn't practicable, the facility must be relocated to the same or higher standard and maintain recreation objectives and setting characteristics.
- Limit signage to that necessary for recreation facility/area identification, interpretation, education and safety /regulatory enforcement.
- Refer to local RMPs, RMP amendments, and activity level planning for specially designated areas for Vehicular Stopping, Parking, and Camping limitations.
- Provide on-going maintenance of recreation and conservation facilities, interpretive and regulatory signs, roads, and trails.

Conservation and Management Actions in Development Focus Areas and DRECP Variance Lands, Future Assessment Areas, and Special Analysis Areas

- Retain, to the extent possible, the identified recreation setting characteristics: physical components of remoteness, naturalness and facilities; social components of contact, group size and evidence of use; and operational

components of access, visitor services and management controls (see recreation setting characteristics matrix).

- Designate SRMAs as exclusion areas for renewable energy development due to the incompatibility with the values of the SRMA. Two exceptions to this management action are: (1) geothermal development is an allowable use if a geothermal-only DFA overlays the SRMA designation and the lease includes a "no surface occupancy" stipulation; and (2) if a DRECP variance land designation overlays the SRMA, renewable energy may be allowed on a case-by-case basis if the proposed project is found to be compatible with the specific SRMA values.
- **Hot Springs, Tamarisk, Pilot Knob, Ocotillo Wells SRMAs:** No renewable energy development will be allowed except for geothermal development with no surface occupancy stipulations. Refer to the individual SRMA documents for SRMA/Recreation Management Zone specific objectives, management actions, and uses. Refer to the Memorandum of Understanding (MOU) between the Department of Interior and California State Parks for agreed upon geothermal development zones.
- **ERMAs:** Retain to the extent possible recreation activities and associated qualities and conditions within these areas.
- **Non-SRMA/ERMA**: Retain to the extent possible recreation activities provided for in field office RMPs.

Mitigation Measures

If impacts to recreation setting characteristics identified in RMPs, or activity plans for designated recreation areas (SRMA, ERMA, OHV Areas, etc.), from proposed projects or developments are identified, one or more of the following mitigation measures will be applied:

- For displacement of dispersed recreation opportunities, commensurate compensation in the form of enhanced recreation operations, recreation facilities or opportunities will be required. If recreation displacement results in resource damage due to increased use in other areas, mitigate that damage through whatever measures are most appropriate as determined by the Field Office.
- Where development displaces facilities, similar new recreation facilities/campgrounds (including the installation of new structures including pit toilets, shade structures, picnic tables, installing interpretive panels, etc.), will be provided.
- If designated vehicle routes adjacent to SRMAS or adjacent to/within ERMAs are directly impacted by renewable energy development activities (includes

modification of existing route to accommodate industrial equipment, restricted access or full closure of designated route to the public, etc.), mitigation will include the development of alternative routes to allow for continued vehicular access, with a similar recreation experience, adjacent/throughout the SRMA/ERMA. In addition to continued access throughout the SRMA/ERMA, mitigation will also include the construction of an "OHV touring route" which circumvents the renewable energy development project area and allows for interpretive signing materials to be placed at strategic locations along the route.

- Impacts to Special Recreation Permit activities will be mitigated by providing necessary planning/NEPA compliance documentation for replacement activities.
- SRMA—If residual impacts to SRMAs occur from renewable energy development, or other development or project impacts, commensurate mitigation through relocation or replacement of facilities or compensation (in the form of a recreation operations and enhancement fund) will be required.
- ERMA—Impacts from development projects that do not enhance conservation or recreation goals will require commensurate mitigation through relocation or replacement of facilities.

Conservation and Management Actions in National Conservation Lands, Areas of Critical Environmental Concern, and Wildlife Allocations

- Refer to the individual National Conservation Areas and ACEC Special Unit Management Plans in Appendix L for specific objectives, management actions and uses. Where ACECs overlap SRMAs, refer to SRMA Special Unit Management Plans in Appendix L also. Where guidance conflicts in these overlap areas, National Conservation Areas/ACEC guidance will prevail.
- Maintain targeted recreation activities, experiences and benefits. Maintain, and where possible enhance, the recreation setting characteristics: physical components of remoteness, naturalness and facilities; social components of contact, group size and evidence of use; and operational components of access, visitor services and management controls.
- Design public access features (access roads, roadside stops, trailheads, interpretive sites, etc.) to support or enhance conservation values for National Conservation Land units.

Conservation and Management Actions in Special Recreation Management Areas

- Protect SRMAs for their unique/special recreation values by prohibiting utility-scale renewable energy development. Refer to the individual SRMA Special Unit

Management Plans in Appendix L for SRMA/Recreation Management Zone specific objectives, management actions, allowable uses, and specific mitigation requirements.

- Manage SRMAs for their targeted recreation activities, experiences and benefits. Maintain (and where possible enhance) the recreation setting characteristics – physical components of remoteness, naturalness and facilities; social components of contact, group size and evidence of use; and operational components of access, visitor services and management controls.

II.3.2.3.9 Soil, Water, and Water-Dependent Resources

The Planning Area contains many soil types, as might be expected in a zone which spans the transition from low desert to rocky desert mountains. This variety of soil types is the result of diversity in parent material, relief, climate, living organisms, and age of the soils. It is important to maximize the ability of these various soils to maintain their functional biological and physical characteristics. Soil types of key concern, some that are unique to these desert environments, include sand dunes, desert pavement, carbonate soils, hydric soils that support wetland habitats, and highly erosive soils.

While the CDCA Plan discussed soils in Chapter 6 and in Appendix XI of the accompanying FEIS, neither document established goals for soil resources. Instead, standard BMPs are currently used to protect soil resources. Among the reference guides listing these BMPs is the BLM (2007) publication *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development*, commonly referred to as the Gold Book, last updated in 2007.

Water is a scarce resource across the Planning Area. Consumptive use by renewable energy projects is generally necessary, with applications including dust control, cleaning of project components, and cooling. These uses, however, may compete with the needs of natural resources such as vegetation, animals, aesthetics, and other users. The primary goal for surface water management is to ensure that waters continue to perform key hydrologic and biogeochemical functions that safeguard water quality and quantity. The primary goal for groundwater management is to maintain safe yield conditions, avoiding the creation or exacerbation of overdraft conditions that result in adverse impacts to other resources.

Surface waters in the Planning Area can be divided into watersheds, or portions of the landscape that collect runoff from the surface, concentrate it into channels, and conduct the resulting flow to a definable location. Many watersheds within the Southern California desert are endorheic; that is, they do not have outlets, but drain internally toward their centers, typically onto dry lake beds called "playas." The most famous of these is Death Valley, which drains to a playa at Badwater. Groundwater basins are defined by aquifers (underground rock formations saturated with water) which may or may not correlate to the surface water watersheds. Aquifers also generally have a flow direction and can be

characterized by the same calculations used for surface flow. Key surface water resources in the Planning Area include the Mojave River, the Amargosa River, ephemeral waterways, and hundreds of springs and seeps. The Colorado River is also a critical water source for most of Southern California, and pumping from its tributary groundwater basins within the Plan Area may adversely impact downstream users and resources. All groundwater resources can be considered key; in many of the desert basins, groundwater is the only water source. Some surface water basins are supplied by tributary groundwater basins in the desert; for example, the perennial sections of the Amargosa and Mojave Rivers depend on groundwater flow reaching the surface. Recognizing the interdependence of this relationship is crucial to appropriate management of desert water resources.

Usage of surface water and groundwater resources is primarily governed by California state water law, which also implements relevant portions of the Federal Water Pollution Control Act (Clean Water Act [CWA] Public Law 92-500, as amended; 33 U.S.C. 1251 et seq.). Federally reserved water rights, however, generally apply to all water needs related to the reservation of federal lands. The BLM and other federal agencies work in cooperation with the California State Water Resources Control Board, CDFW under California Fish and Game Code Section 1600, and the California Department of Water Resources regarding management of water resources.

The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters (Section 101a). Under Sections 401 and 404, the CWA regulates point-source and non-point-source pollution.

The groundwater resources beneath federally managed lands are primarily the responsibility of those agencies managing the land, except where a local jurisdiction has been established or a basin adjudication has occurred through court action.

II.3.2.3.9.1 Goals and Objectives

This alternative would not amend existing goals and objectives in the current land use plans, including the relevant CDCA standards and guidelines listed in the CMAs section of the Livestock Grazing section above (Section II.3.2.3.5.2). However, in this alternative, the DRECP would add the following goals and objectives:

Soil Resources

Goals

- Avoid accelerated rates of soil erosion and loss of habitat and habitat productivity resulting from soil erosion.

- Where soils currently exhibit functional biological and physical characteristics that are appropriate to soil type, climate, and land form, minimize disturbance that could compromise these characteristics.

Objectives

- To the extent possible, avoid disturbance of desert pavement, biologically intact soil crusts, and highly erodible soils (via wind or water).
- Minimize soil disturbances to reduce flooding potential; maintain natural infiltration rates, wildlife habitat, and soil health; and reduce wind and water erosion potential.
- Manage soils to meet or exceed the relevant Soil Standards of Rangeland Health, as indicated by ground or plant cover, diversity of plant species, minimal evidence of accelerated wind and water erosion, and the presence of well-developed and old-growth biological soil crusts where appropriate.
- Implement relevant best management practices and other measures to comply with design features required in the Solar and Wind Final PEISs. Required soil resource design features for solar projects are listed in the Solar PEIS ROD in Appendix A.2.2.8.

Surface Water Resources

- **Goal:** Ensure that any surface waters continue to perform key hydrologic and biogeochemical functions that may affect water quality.

Objectives

- Surface water flows that are dependent upon groundwater, as well as their source aquifers, will remain intact and functional via the maintenance of adequate flow and water table elevations needed for water-dependent resources.
- Water dependent vegetation, including groundwater-dependent microphyll woodlands, mesquite bosques, and riparian vegetation associated with perennial and intermittent streams, will remain in place to provide a natural buffer for minimizing adverse impacts to water quality by removing pollutants and sediment from surface runoff.
- Truncation, realignment, channelization, lining, or filling of perennial, intermittent, and ephemeral surface water resources will be minimized or eliminated where such actions could reduce any available riparian habitat, eliminate the natural buffer system for filtering runoff, or change a stream's hydrology by decreasing water storage capacity or increasing water flow velocity.

- Dry wash morphology, function, and evolution will be maintained to ensure continuity of ecological processes for meeting identified conservation objectives.
- Relevant best management practices and other adaptive measures will be implemented to comply with design features required in the Solar and Wind Final PEISs. Required surface water resource design features for solar projects are listed in the Solar PEIS ROD in Appendices A.2.2.10 and A.2.2.11.

Groundwater Resources

- **Goal:** Manage the use of groundwater to avoid the creation or exacerbation of overdraft conditions and the potential to cause negative impacts to the aquifers.

Objectives

- Do not authorize consumptive groundwater production (or beneficial use) from an identified groundwater basin to exceed the estimated safe yield of that basin.
- Avoid groundwater withdrawals that have direct and indirect effects on groundwater-dependent habitats including aquatic, wetland, playa, microphyll woodland, and riparian habitats.
- Mitigate unavoidable impacts to groundwater-dependent habitats due to groundwater extraction through offsetting actions that achieve neutral or positive effects on these habitats to the extent possible.
- Implement relevant best management practices and other measures to comply with design features required in the Solar and Wind Final PEISs. Required groundwater resource design features for solar projects are listed in the Solar PEIS in Appendix A.2.2.10.

II.3.2.3.9.2 Conservation and Management Actions

Conservation and Management Actions Common to the Entire Planning Area

General

- Stipulations or conditions of approval for any project will be imposed that provide appropriate protective measures to protect the quantity and quality of all water resources (including ephemeral, intermittent, and perennial water bodies) and any associated riparian habitat. These water resources will be identified through the analysis associated with the issuance of the authorization, or approval of the plan of development.

- Any buffer zones, riparian setbacks, no-development areas, etc., identified as appropriate to a particular feature or resource, will be determined on a site-specific basis, and will be consistent with the plan decision to protect these resources as appropriate. In general, placement of permanent facilities within buffers or protected zones will be discouraged, but may be permitted if water and riparian resource management objectives can be maintained.

Groundwater Resources

- Exceptions: Exceptions to any of these stipulations, as well as those listed below under the subheadings "Soil Resources," "Surface Water," and "Groundwater Resources," may be granted by the authorized officer if the operator submits a plan that demonstrates:
  - The impacts from the proposed action are temporary;
  - The impacts are minimal (e.g., impact less than 5% of the mapped resource within the project ROW) or can be adequately mitigated; *and*
  - Critical resources, including threatened and endangered species, are fully protected.
- Modifications: No modifications will be granted.
- Waivers: No waivers will be granted.

Soil Resources

- Limit disturbance of sand flow corridors and sand dunes so that no more than 5% of the sand flow corridors and sand dunes within a proposed project footprint is disturbed for construction
- The extent of desert pavement within the proposed project right of way shall be mapped. Limit disturbance of desert pavements so that no more than 20% of the desert pavements within a proposed project footprint will be disturbed during construction.
- The extent of additional sensitive soil areas (cryptobiotic soil crusts, hydric soils, highly corrosive soils, expansive soils, and soils at severe risk of erosion) shall be mapped. Limit disturbance of sensitive soil areas (e.g., cryptobiotic soil crusts), so that no more than 20% of the sensitive soil areas within a proposed project footprint will be disturbed during construction.
- Where possible, side casting shall be avoided where road construction requires cut-and-fill procedures.

Surface Water

- Exclusion areas will be established in all wetlands, riparian areas (seeps, springs, perennial and intermittent streams), playas (dry lake beds), and Wild and Scenic River corridors.
- Section 404 and 401 of the CWA will be complied with for dry washes within the proposed ROW that have been or will likely be determined to be jurisdictional waters.
- Section 402 of the CWA will be complied with for any activity that is determined to be a point source of pollution.
- Within all zones except military lands, long-term impacts to desert riparian woodlands will be limited to 5% of the total mapped acreage of this vegetative type.
- If desert riparian woodlands are permanently impacted, they must be mitigated through compensatory mitigation at a 5:1 ratio.
- Height restrictions on technology will be considered in order to mitigate impacts associated with wildlife use of riparian areas and wetlands (e.g., power tower technology may not be allowed in migratory flyways frequented by waterfowl).
- All riparian areas will be maintained at, or brought to, proper functioning condition.
- All relevant requirements of Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands) will be complied with.
- The 100-year floodplain boundaries for any surface water feature in the vicinity of the project will be identified. If maps are not available from the Federal Emergency Management Agency (FEMA), these boundaries will be determined via hydrologic modeling and analysis as part of the environmental review process. Construction within, or alteration of, 100-year floodplains will be avoided where possible, and permitted only when all required permits from other agencies are obtained.

Groundwater Resources

For any project that proposes to utilize groundwater resources, the following stipulated CMAs shall apply, regardless of project location:

- A project's groundwater extraction shall not contribute to exceeding the estimated perennial yield for the basin in which the extraction is taking place. Perennial yield is that quantity of groundwater that can be withdrawn from the groundwater basin without exceeding the long-term recharge of the basin or unreasonably affecting the basin's physical and chemical integrity. It is further clarified arithmetically below.

- Water extracted or consumptively used for the construction, operation, maintenance, or remediation of the project shall be solely for the beneficial use of the project or its associated mitigation and remediation measures, as specified in approved plans and permits.
- If possible, all unavoidable impacts on surface waters shall be mitigated to ensure no net loss of function and value, as determined by the Coordination Group, as the result of project implementation.
- Consideration shall be given to design alternatives that maintain the existing hydrology of the site or redirect excess flows created by hardscapes and reduced permeability from surface waters to areas where they will dissipate by percolation into the landscape.
- All hydrologic alterations shall be avoided that could reduce water quality for all applicable beneficial uses associated with the hydrologic unit in the project area, or specific mitigation measures shall be implemented that will minimize unavoidable water quality impacts, as determined by the Coordination Group. These beneficial uses may include municipal, domestic, or agricultural water supply; groundwater recharge; surface water replenishment; recreation; water quality enhancement; flood peak attenuation or flood water storage; and wildlife habitat. A Water (Groundwater) Supply Assessment shall be prepared prior to project certification or authorization. This assessment must be approved by the Coordination Group prior to the development, extraction, injection, or consumptive use of any water resource. The purpose of the Water Supply Assessment is to determine whether over-use or over-draft conditions exist within the project basin(s), and whether the project creates or exacerbates these conditions. The Assessment shall include an evaluation of existing extractions, water rights, and management plans for the water supply in the basin(s) (i.e., cumulative impacts), and whether these cumulative impacts (including the proposed project) can maintain existing land uses as well as existing aquatic, riparian, and other water-dependent resources within the basin(s). This assessment shall identify:
    - All relevant groundwater basins or sub-basins and their relationships.
    - All known aquifers in the basin(s), including their dimensions, whether confined or unconfined, estimated hydraulic conductivity and transmissivity, groundwater surface elevations, and direction and movement of groundwater.
    - All surface water basin(s) related to water runoff, delivery, and supply, if different from the groundwater basin(s).
    - All sites of surface outflow (springs or seeps) contained within the basin(s), including historic sites.

- All other surface water bodies in the basins(s), including rivers, streams, ephemeral washes/drainages, lakes, wetlands, playas, and floodplains.
- The water requirements of the proposed project and the source(s) of that water.
- An analysis demonstrating that water of sufficient quantity and quality is available from identified source(s) for the life of the project.
- An analysis of potential project-related impacts on water quality and quantity needed for beneficial uses, reserved water rights, or habitat management within or down gradient of the groundwater basin within which the project would be constructed.

The primary product of the Water Supply Assessment shall be a baseline water budget, which shall be established based on the best-available data and hydrologic methods for the identified basin(s). This water budget shall classify and describe all water inflow and outflow to the identified basin(s) or system using best-available science and the following basic hydrologic formula or a derivation:

$$P - R - E - T - G = \Delta S$$

where P is precipitation and all other water inflow or return flow, R is surface runoff or outflow, E is evaporation, T is transpiration, G is groundwater outflow (including consumptive component of existing pumping), and ΔS is the change in storage. The volumes in this calculation shall be in units of either acre-feet per year or gallons per year. The water budget shall quantify the existing perennial yield of the basin(s). Perennial yield is defined arithmetically as that amount such that

$$P - R - E - T - G \geq 0$$

Water use by groundwater-dependent resources is implicitly included in the definition of perennial yield. For example, in many basins the transpiration component (T) includes water use by groundwater-dependent vegetation. Similarly, groundwater outflow (G) includes discharge to streams, springs, seeps, and wetlands. If one or more budget components is altered, then one or more of the remaining components must change for the hydrologic balance to be maintained. For example, an increase in the consumptive component of groundwater pumping can lower the water table and reduce transpiration by groundwater-dependent vegetation. The groundwater that had been utilized by the groundwater-dependent vegetation would then be considered "captured" by groundwater pumping. Similarly, increased groundwater consumption can capture groundwater that discharges to streams, springs, seeps, wetlands and playas. These changes can occur slowly over time, and may require years or decades before the budget components are fully adjusted. Accordingly, the water/groundwater supply assessment requires that the best-available data and hydrologic methods be employed to quantify these

budgets, and that groundwater consumption effects on groundwater-dependent ecosystems be identified and addressed.

The water/groundwater supply assessment shall also address:

- Estimates of the total cone of depression considering cumulative drawdown from all potential pumping in the basin(s), including the project, for the life of the project through the decommissioning phase.
- Potential to cause subsidence and loss of aquifer storage capacity due to groundwater pumping.
- Potential to cause injury to other water rights, water uses, and land owners.
- Changes in water quality and quantity that affect other beneficial uses.
- Effects on groundwater dependent vegetation and groundwater discharge to surface water resources such as streams, springs, seeps, wetlands, and playas that could impact biological resources, habitat, or are culturally important to Native Americans.
- Additional field work that may be required, such as an aquifer test, to evaluate site specific project pumping impacts and if necessary, establish trigger points that can be used for a Groundwater Water Monitoring, Management, and Mitigation Plans.
- The mitigation measures required, if there are significant or potentially significant impacts on water resources, that include but are not limited to, the use of specific technologies, management practices, retirement of active water rights, development of a recycled water supply, or water imports.

- A Groundwater Monitoring and Reporting Plans, and Mitigation Action Plans shall be prepared to verify the Water Supply Assessment and adaptively manage water use as part of project operations. This plan shall be approved by the Coordination Group prior to the development, extraction, injection, or consumptive use of any water resource. The quality and quantity of all surface water and groundwater used for the project shall be monitored using this plan. Groundwater monitoring includes measuring the effects of groundwater extraction on groundwater surface elevations, groundwater flow paths, changes to groundwater-dependent vegetation, and of aquifer recovery after project decommissioning. Surface water monitoring, if applicable, shall monitor changes in the flows, water volumes, channel characteristics, and water quality. Monitoring frequency and geographic scope shall be decided on a site-specific basis and in coordination with the appropriate agencies that manage the water resources of the region. The geographic scope will include at the very least, all basins/sub-basins that potentially receive inflow from the basin where the proposed project may be sited, and all basins/sub-basins that may

potentially contribute inflow to the basin where the proposed project is located. The plan shall also detail any mitigation measures that may be required as a result of the project. This plan and all monitoring results shall be made available to the Coordination Group.

- Where groundwater extraction has potential to exceed the basin's perennial yield or has the potential to impact water resources, one or more "trigger points," or specified groundwater elevations in specific wells, shall be established by the Authorizing Officer, where additional mitigation measures would be imposed if the groundwater elevation at the designated monitoring wells falls below the trigger point(s)(or exceeds the trigger).
- Groundwater pumping mitigation shall be imposed if groundwater monitoring data indicate impacts on water-dependent resources that exceed those anticipated and otherwise mitigated for in the NEPA analysis and ROD, even if the basin's perennial yield is not exceeded. Water-dependent resources include riparian or phreatophytic vegetation, springs, seeps, streams, and other approved domestic or industrial uses of groundwater. Mitigation measures may include changes to pumping rates, volume, or timing of water withdrawals; coordinating and scheduling groundwater pumping activities in conjunction with other users in the basin; acquisition of project water from outside the basin; and/or replenishing the groundwater resource over a reasonably short timeframe.
- Water-conservation measures shall be required in basins where current groundwater demand is high and has the future potential to rise above the estimated perennial yield (e.g., Pahrump Valley). These measures may include the use of specific technology, management practices, or both. A detailed discussion and analysis of the effectiveness of mitigation measures must be included. Application of these measures shall be detailed in the Groundwater Monitoring and Reporting Plan, and the Mitigation Action Plan.
- Groundwater extractions from adjudicated basins, such as the Mojave River Basin, may be subject to additional restrictions imposed by the designated authority; examples include the Mojave Water Agency and San Bernardino County (see County Ordinance 3872). Where provisions of the adjudication allow for acquisition of water rights, project developers could be required to retire water rights at least equal in volume to those necessary for project operation or propose an alternative offset based on the conditions unique to the adjudicated basin.
- Projects shall comply with local requirements for any permanent or temporary domestic water use and wastewater treatment.

- The siting, construction, operation, maintenance, remediation, and abandonment of all wells shall conform to specifications contained in the California Department of Water Resources Bulletins #74-81 and #74-90 and their updates.
- The Colorado River Accounting Surface Method, as defined in USGS SIR 2008-5113 and updates, and ordered in the Consolidated Decree by the United States Supreme Court in Arizona v. California, 547 U.S. 150 (2006), shall be the accepted method of determining whether project-related pumping denies the Colorado River of water which it would otherwise receive from its tributary basins. If project-related groundwater drawdown below the Accounting Surface is expected in a basin whose groundwater is tributary to the Colorado River, and all or a portion of that project is on BLM-managed land, that consumption shall be considered subject to the Law of the River (Colorado River Compact of 1922 and amendments). In such cases, BLM shall require the applicant to offset or otherwise mitigate the volume of water causing drawdown below the accounting surface. Details of such mitigation measures and the right to the use of water shall be described in the Water Monitoring, Management, and Mitigation Plan.

Soil, Water, and Water-Dependent Resources CMAs Restricted to Specific Areas on BLM Lands

- **Stipulations for groundwater development in the proximity of Devils Hole**: Any development scenario within 25 miles of Devils Hole shall include a plan to achieve *zero-net* or *net-reduced* groundwater pumping to reduce the risk of adversely affecting senior federal reserved water rights, the designated critical habitat of the endangered Devils Hole pupfish, and the free-flowing requirements of the Wild and Scenic Amargosa River. This plan will require operators to acquire one or more minimization water rights (MWRs) in the over-appropriated, over-pumped, and hydraulically connected Amargosa Desert Hydrographic Basin in Nevada. The MWR(s) shall be: (1) an amount equal (at minimum) to that which is needed for construction and operations; (2) historically fully utilized, preferably for agricultural use; and (3) senior, or closer to Devils Hole than the proposed point of diversion. The MWR(s) shall be retained by the operator for at least five years, during which stakeholders will have the opportunity to demonstrate that development of the MWR(s) will not lead to water level declines in Devils Hole. If a consensus between DOI agencies and these stakeholders is not reached within five years, the MWR(s) shall be cancelled by the operator.
- **Stipulations for groundwater development in the Calvada Springs/South Pahrump Valley DFA:** Developers in this DFA shall be required to acquire one or more MWRs in the Pahrump Valley Hydrographic Basin in Nevada. The acquired MWR(s) must: (1) be at least equal to the amount proposed to be required and

actually used for project construction and operations; and (2) be fully utilized for at least the prior ten years.

- **Stipulations for development in the vicinity of Death Valley National Park, Joshua Tree National Park, or Mojave National Preserve:** Project proponents shall analyze and address any potential impacts which their projects may have on Death Valley National Park, Joshua Tree National Park, or Mojave National Preserve. BLM will consult with the National Park Service on this process. The analysis or analyses shall include:
  - Potential impacts on the water balances of groundwater basins within these parks and preserves.
  - A map identifying all potentially impacted surface water resources in the vicinity of the project, including a narrative discussion of the delineation methods used to discern those surface waters in the field.
  - Any project-related modifications to surface water resources, both temporary and permanent.
  - Analysis of any potential impacts on perennial streams, intermittent streams, and ephemeral drainages that could negatively impact natural riparian buffers.
  - Impacts of any project proposed truncation, realignment, channelization, lining, or filling of surface water resources that could change drainage patterns, reduce available riparian habitat, decrease water storage capacity, or increase water flow velocity or sediment deposition, in particular where stormwater diverted around or through the project site is returned to natural drainage systems downslope of the project.
  - Any potential indirect project-related causes of hydrologic changes that could exacerbate flooding, erosion, scouring, or sedimentation in stream channels.
  - Alternatives and mitigation measures proposed to reduce or eliminate such impacts.
- **Exceptions:** No exceptions will be granted.
- **Modifications:** No modifications will be granted.
- **Waivers:** No waivers will be granted.

II.3.2.3.10 Special Vegetation Features

Creosote Rings, Yucca Clones and Saguaro Cactus are considered special vegetation features by BLM. These resources constitute a fragile and unique nonrenewable feature on the landscape.

II.3.2.3.10.1 Goals and Objectives

- Ensure that special vegetative resources are given consideration in land use planning and in management decisions.
- Preserve and protect larger features on the landscape. Protect and conserve significant special vegetative resources as they are discovered on public lands.
- Manage special vegetative resources in ways that prioritize research needs, facilitate educational and recreational needs, and protect important individual sites.
- Develop specific objectives and management actions for individual localities, when special vegetative features are discovered in the Planning Area.
- Identify special vegetative features localities to aid in the project review and design process.
- Develop interpretive materials to correspond with recreational uses to educate public about protecting special vegetative features and avoiding disturbance of individual localities.

II.3.2.3.10.2 Conservation and Management Actions

Conservation and Management Actions for the Entire Planning Area

- For project-specific NEPA analysis, a map delineating potential sites of these vegetation features is required.
- Yucca Clones larger than 3 meters in diameter (longest diameter if the clone forms an ellipse rather than a circular ring) shall be avoided.
- Creosote Rings larger than 5 meters in diameter (longest diameter if the "ring" forms an ellipse rather than a circle) shall be avoided.
- Saguaro cactus should be managed in such a way as to provide long-term habitat for the California populations not just individual plants.

II.3.2.3.11 Vegetation

This section is for general vegetation management. It includes disposal of vegetative resources through the Vegetation Use Authorization program.

II.3.2.3.11.1 Conservation and Management Actions

Conservation and Management Actions for the Entire Planning Area

- Management of cactus, yucca and other succulents will adhere to current policy.

- Promote appropriate levels of dead and downed wood on the ground, outside of campground areas to provide wildlife habitat, seed beds for vegetation establishment, and reduce soil erosion.
- Allow for the collection of plant material consistent with the maintenance of natural ecosystem processes.
- Within the Bishop Field Office area, provide yearlong protection of endangered, threatened, candidate, and sensitive plant and animal habitats. Yearlong protection means that no discretionary actions which would adversely affect target resources would be allowed except in DFAs

Conservation and Management Actions for Development Focus Areas and Study Area Lands

- Vegetative Use Authorizations: Allow for the commercial collection of seed in DFAs and designated OHV Open Areas. CMA's within those areas will apply to this kind of activity.

Vegetative Use Authorizations

- Consider disposal of succulents through public sale per Policy.

II.3.2.3.12 Visual Resources Management

The vast open vistas and stark landscapes of the California desert are important attributes that the public is concerned with protecting. The landscapes have been inventoried using BLM's Visual Resource Inventory (VRI) classification system, which is discussed in Volume III. Through the DRECP process, BLM is designating VRM Classes to all public lands in CDCA. Other parts of the Planning Area have been assigned VRM Classes through previous plans. Each VRM Class allows for landscape changes from management activities and use authorizations that contrast at different levels with the existing characteristic landscapes. In all situations, actions are taken to minimize visual contrasts through careful project design. Note that VRM Class objectives provide one of many parameters for the management and conservation of public land values (including visual values). Therefore, just because a given project meets the VRM objectives, does not mean that it will be permitted if other plan objectives preclude it development.

II.3.2.3.12.1 Goals and Objectives

VRM Class Definitions

- Class I: The objective of this class is to preserve the existing character of the landscape. This class allows for natural ecological changes and only very limited

management activities and uses. Any contrasts with the natural landscape must be minimal and not attract attention. This class is typically limited to designated Wilderness, Wilderness Study Areas, or wild and scenic river segments with a "Wild" classification.

- Class II: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities and uses can be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture in the predominant natural features of the characteristic landscape.
- Class III: The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape can be moderate. Management activities and uses may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements of the predominant natural features of the landscape.
- Class IV: The objective of this class is to allow for management activities and uses requiring major modifications to the natural landscape. The level of change to the characteristic landscape can be high. Management activities and uses may dominate the view and be a major focus of viewer attention. However, every attempt should be made to mitigate the impacts of activities through careful location and repeating the visual elements of the landscape.

Figure II.3-5 shows the VRM Classes under the preferred alternative.

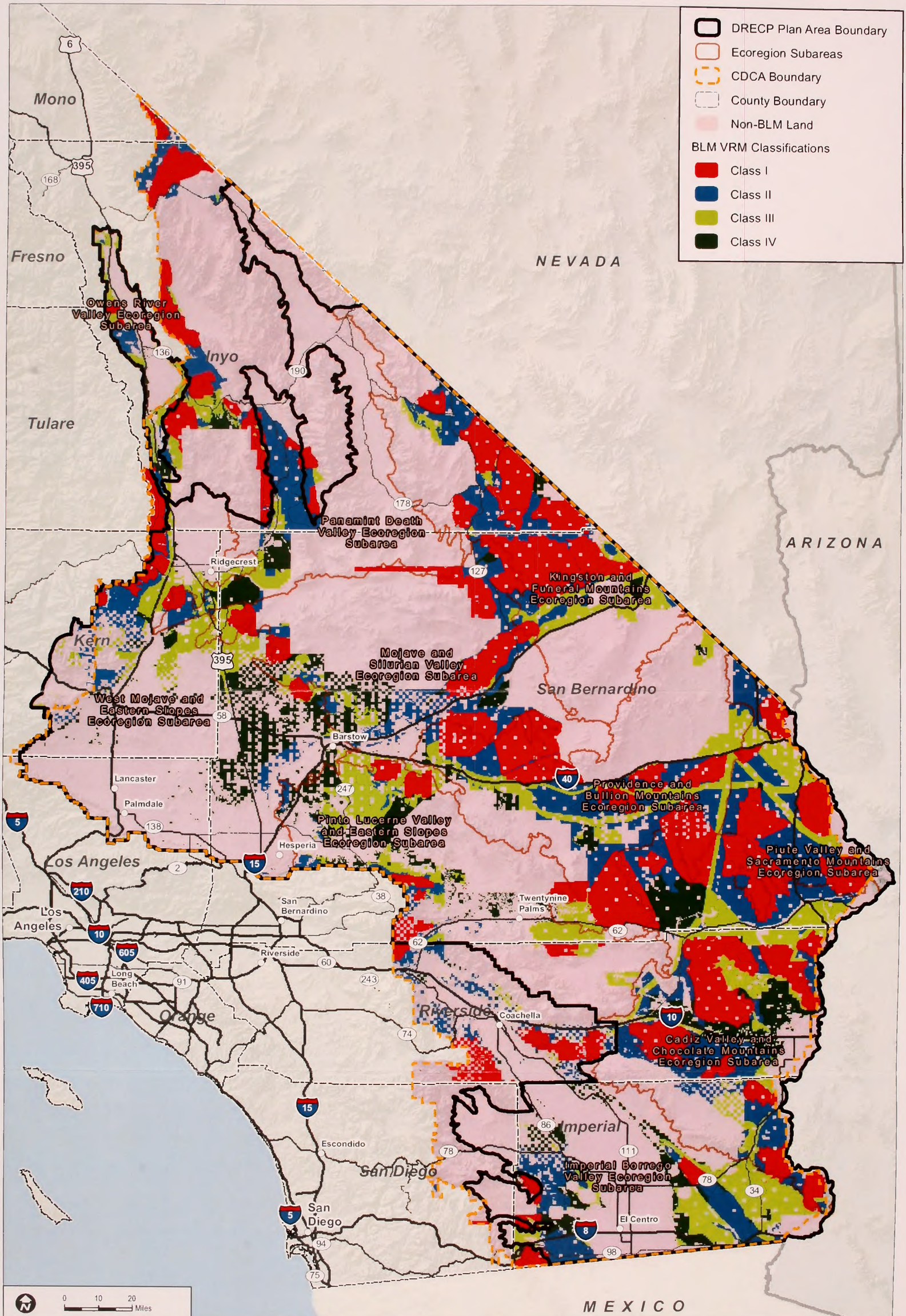
II.3.2.3.12.2 Conservation and Management Actions

Conservation and Management Actions for the Entire Planning Area

- Ensure that development within each of the VRM Class polygons meets the VRM objectives described above as measured through a visual contrast rating process.

Ensure that transmission facilities are designed and located to meet the VRM Class objectives for the area in which they are located. Transmission lines routed through approved corridors where they do not meet VRM Class Objectives will require RMP amendments to establish a conforming VRM Objective. All reasonable effort must be made to reduce visual contrast of these facilities in order to meet the VRM Class before pursing RMP amendments. This includes changes in routing, using lattice towers (vs. monopole), color treating facilities using an approved color from the BLM Environmental Color Chart CC-001 (dated June, 2008 or June, 2013) (vs. galvanized) on towers and support facilities, and employing other BMPs to reduce contrast. Such efforts will be retained even if an RMP amendment is determined to be needed. Visual Resource BMPs that reduce adverse visual contrast will be applied in VRM Class conforming situations. For a reference of BMPs for

reducing visual impacts see the *Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands,* available at http://www.blm.gov/style/medialib/blm/wo/MINERALS_REALTY_AND_RESOURCE_PROTECTION_/energy/renewable_references.Par.1568.File.dat/RenewableEnergyVisualImpacts_BMPs.pdf



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.3-5

Preferred Alternative – BLM Visual Resource Management Classes

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_II\figII.3-5.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

Conservation and Management Actions for Development Focus Areas and Study Area Lands

- Manage all DFAs as VRM Class IV to allow for industrial scale development. Employ best management practices to reduce visual contrast of facilities.
- Manage all variance lands as VRM Class III.
- Require development to incorporate visual design standards and include latest BMPs (from Solar, Wind, West Wide Energy Corridor, and Geothermal PEISs, the Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands and other programmatic BMP documents).
- Encourage development in a planned fashion within DFAs (e.g. similar to the planned unit development concept used for urban design – i.e. in-fill vs. scattered development, use of common road networks, Generator Tie Lines etc., use of similar support facility designs materials and colors etc.) to avoid industrial sprawl.
- Require regional mitigation for visual impacts for public lands outside of DFAs but open to consideration for energy development (variance lands etc.). Mitigation will be based on the VRI class and the underlying visual values (scenic quality, sensitivity, and distance zone) for the development area as it stands at the time the ROD is signed for the DRECP. Compensation may involve reclamation of visual impacts that are present within other areas designated as BLM VRM Class I or II lands (so that they are no longer visible in the long-term), mitigation on BLM lands inventoried as having equal to or greater visual resource values, or amending RMP for lands located within VRM Class III or IV to a higher level of protection (VRM Class I or II) for areas that are visually intact with no cultural modifications and have visual resource inventoried values that are equal to or greater in value and place a protective Visual ACEC delineated around the compensatory mitigated area. The following mitigation ratios will be applied:
- VRI Class II 2:1 ratio
- VRI Class III 1:1 ratio
- VRI Class IV no mitigation required
- Require compensatory mitigation on public lands developed within DFAs at one-half the level of lands outside of DFAs
    - VRI Class II 1:1 ration
    - VRI Class III 1/2 : 1 ratio
    - VRI Class IV, no mitigation required

Require additional mitigation requirements where projects affect viewsheds of specially designated areas (e. g. national scenic and historic trails, National Parks, etc.) and are discussed under those programs.

Required Visual Resource BMPs. All development within and outside the DFAs will abide by the BMPs addressed in the *Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands*, including, but not limited to the following:

- Transmission.
- Color-treat monopoles Shadow Gray per the BLM Environmental Color Chart CC001 unless a more effective color choice is selected by the local Field Office VRM specialist.
- Lattice towers and conductors will have non-specular qualities.
- Lattice Towers will be located a minimum of ¾ miles away from Key Observation Points such as roads, scenic overlooks, trails, campgrounds, navigable rivers and other areas people tend to congregate and located against a landscape backdrop when topography allows.
- Solar – Color treat all facilities Shadow Gray from the BLM Environmental Color Chart CC001 unless a more effective color is selected by the Field Office VRM specialist, including but not limited to:
- Concentrated solar thermal parabolic trough panel backs,
- solar power tower heliostats,
- solar power towers,
- cooling towers,
- Power blocks
- Wind – Color treat all facilities Shadow Gray with the exception of the wind turbine and towers 200 vertical feet or more.
- Night Sky – BMPs to minimize impacts to night sky including light shielding will be employed.

Conservation and Management Actions in Areas of Critical Environmental Concern and Special Recreation Management Areas

- Manage Alabama Hills SRMA and Manzanar ACEC to conform to VRM Class II standards.

II.3.2.3.13 Wild Horses and Burros

Wild Horses and Burros are a resource managed and protected under the Wild Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195), and its amendments. The Act designated areas where the BLM manages the animals as a resource. The animals cannot be managed outside these designated areas, nor can new areas be created on public lands for the animals. The Herd Management Areas (HMAs) in the Plan Area are the last burro HMAs remaining in California. In addition, the California Fish and Game Code Sections 10930–10931 identify much of the southeastern portion of the state as a burro sanctuary.

HMAs are where BLM currently actively manages for wild horses and burros. Herd Areas are where the animals were found at the passage of the Wild Free-Roaming Horses and Burros Act of 1971. Through the land use planning process, the HMAs were decided to be actively managed for wild horses and burros.

II.3.2.3.13.1 Goals and Objectives

This alternative would not amend existing goals and objectives in the current land use plans. In addition to those goals and objectives, the DRECP would include the following goals and objectives:

Goals

- Ensure that wild horse and burro resources are given full consideration in land use planning and in management decisions.
- Preserve and protect remaining HMAs in the DRECP.
- Manage wild horse and burro populations in ways that ensure thriving natural ecological balance of the herds in their habitats.

Objectives

- Development cannot reduce or otherwise negatively impact burros' forage, water, shelter, space or impede their wild, free-roaming behavior in HMAs.
- Ensure renewable energy development projects have no negative impacts on BLM burros.

II.3.2.3.13.2 Conservation and Management Actions

Conservation and Management Areas for Development Focus Areas and DRECP Variance Lands, Future Assessment Areas, and Special Analysis Areas

- Incorporate all guidance provided by the Wild Free-Roaming Horses and Burros Act of 1971, its amendments, associated regulations, and any pertinent court rulings.
- Do not allow development that would reduce burros' access to forage, water, shelter, or space or impede their wild, free-roaming behavior in HMAs.
- Mitigation can only occur on lands that the animals were found at the passage of the Act. To expand the boundaries of an HMA back into the Herd Areas would require a land use plan amendment, the cost of which would be incurred by the application wishing to develop in the HMA.

II.3.2.3.14 Wilderness Characteristics

As part of the BLM's multiple-use and sustained-yield mandate, Section 201 of FLPMA requires the BLM to maintain on a continuing basis an inventory of all public lands and their resources and other values, which includes wilderness characteristics. Lands within the Planning Area that could be affected by renewable energy or other development authorized under the plan were inventoried for wilderness characteristics in 2012-13 under the direction of BLM Manual 6310. A total of 643,000 acres were found to have wilderness characteristics. Those lands having wilderness characteristics are carried through the alternatives to determine which of these lands will be managed to protect wilderness characteristics. Portions of existing transmission corridors were not inventoried for lands with wilderness characteristics as part of the draft DRECP process. If new development is proposed in a designated corridor, an inventory would be completed at that time. For areas where lands with wilderness characteristics occur, mitigation at a 1:1 ratio would be required (same as DFAs).

II.3.2.3.14.1 Goals and Objectives

Goal

- Ensure that adequate consideration and protection is given to lands with wilderness characteristics outside of designated Wilderness and Wilderness Study Areas and that these areas are managed to protect wilderness characteristics where appropriate in concert with other multiple-use and sustained-yield objectives

Objective

- Protect wilderness characteristics as an integral component of multiple-use and sustained-yield management of Planning Area BLM lands consistent with other goals and objectives.

II.3.2.3.14.2 Conservation and Management Actions

Conservation and Management Actions for the Entire Planning Area

- Complete an inventory of areas for proposed development that do not have an updated wilderness characteristics inventory.
- Employ avoidance measures as described under DFAs and approved transmission corridors.
- Compensation will be at a 2:1 ratio for impacts from any development that impacts wilderness characteristics.

Conservation and Management Actions for Those Lands Identified for Management to Protect Wilderness Characteristics

The areas identified in Figure II.3-6 will be managed to protect wilderness characteristics, and will be subject to the following CMAs.

- Include a no surface occupancy stipulation for any mineral with no exceptions, waivers, or modifications.
- Exclude these areas from ROW development.
- Close areas to construction of new roads and routes. Vehicles would continue to be permitted on existing routes, but the routes would not be improved beyond current standards.
- Close areas to mineral material sales.
- Prohibit commercial or personal-use permits for extraction of materials (e. g. no wood-cutting permits).
- Manage the area as VRM II.
- Require that new structures and facilities are related to the protection or enhancement of wilderness characteristics or necessary for the management of uses allowed under the land use plan.
- Make lands unavailable for disposal from federal ownership.
- Recommend withdrawal from mineral entry.

Conservation and Management Actions in Development Focus Areas and Approved Transmission Corridors

- Allow development in areas inventoried and identified as lands with wilderness characteristics.
- Require mitigation of lands with wilderness characteristics at a 1:1 mitigation. This would be accomplished through acquisition and donation to the federal government of: (a) wilderness inholdings; (b) wilderness edge holdings that have inventoried wilderness characteristics; or (c) other areas within the Planning Area that are managed to protect wilderness characteristics. Restoration of Wilderness and Wilderness Study Area impacts could be substituted for acquisition.

II.3.2.4 CDCA Plan Amendments

Portions of the CDCA are outside of the DRECP boundary. The following decisions apply to the full CDCA, but not the other RMPs amended by the DRECP.

II.3.2.4.1 Multiple-Use Classes

The following components are appropriate both within and outside of the Planning Area under all action alternatives to allow consistency in land management:

- Non-designated land that is a 'cherry stem' into wilderness will be classified under wilderness in a sub category as 'cherry stem - non designated wilderness'. In this sub category otherwise excluded activities in wilderness such as road grading, maintenance of existing facilities, etc., may be conducted subject to appropriate analysis and mitigation. The CMAs that state that minimum tool analysis is required for the wilderness land will be modified to state that minimum tool analysis will not be required for these 'cherry stem' lands.
- The remaining non-designated land will be divided into two different land use allocation groups:
    - Lands that are classified as Moderate or Intensive MUCs under No Action will be combined into one land use allocation called 'standard focus'. The CMAs for standard focus lands will be the same as the current CDCA plan MUC Moderate guidelines.
    - Lands in the Limited MUC under No Action will be placed in a 'conservation focus' land use allocation. The CMAs for conservation focus lands will be the same as the current CDCA plan MUC Limited guidelines.

Table II.3-50 presents an overview of how the CDCA's MUCs under the No Action Alternative translate to the DRECP's land allocations in management objectives/allowable

uses. It's important to note that while similarities can be drawn in management approaches between the two plans' differing allocations, the same cannot be said of their geographic distributions. For example, while MUC L lands may be managed similarly to DRECP conservation lands, MUC L lands do not automatically become conservation lands- they may end up in a variety of different DRECP allocations from DFAs to NLCS, depending on the resources present and the DRECP alternative considered. The table also provides a summary of how broad classes of land uses would be treated under the DRECP's preferred alternative in the different land allocations. This table does not, by itself, approve any specific activity, but only identifies the types of activities that could be approved. Prior to approval of any specific allowable activity identified in this table, the activity would also need to comply with current laws, regulations and policies, including, but not limited to, NEPA, ESA, ARPA, and be included in Native American consultations.

Table II.3-50
CDCA Plan and DRECP Preferred Alternative Crosswalk

DRECP Allocations (Equivalent/similar CDCA Multiple-Use Class)							
Land Use	*Wilderness (Class C)*	*ACEC, NLCS land that is not wilderness, SRMA or ERMA (Class L)*	*SRMA, ERMA (Class L, M, I)*	*Catellus (allocated, same as adjacent land- ACEC, NLCS, DFA, etc.)*	*Non-Designated Lands (Unclassified or Class M)*	*Variance (Unclassified or Class M)*	*DFA (Class I)*
Agriculture	Agricultural use, excluding livestock, is not allowed.						
Characterization – Studies and Research	Studies and research will be considered, as appropriate considering the management goals and objectives of the specific area, and compatible with existing and approved uses.						
Air Quality	All approved activities will meet air quality standards in all areas						
Water Quality/ Soil Management	All approved projects will not negatively impact water quality and soil standards should be met.						
Cultural and Paleontological Resources	Archaeological and paleontological values will be preserved and protected for all approved activities.						
Native American Values	Native American cultural and religious values will be preserved and protected. Native American groups will be consulted.						
Electrical Generation Facilities	Not allowed	New development is not allowed. Maintenance, retrofitting for newer technology, and operation of existing or previously approved facilities is allowed.		May be developed if approved by the State Director and not in conflict with deed restrictions.	Not allowed	May be allowed.	Allowed.
Transmission/ Distribution Facilities	Not allowed.	New development is not allowed. Maintenance, retrofitting for newer technology, and operation of		May be developed if approved by the State Director	New development may be allowed. Maintenance, retrofitting for newer technology, and operation of		New development is allowed. Maintenance,

Table II.3-50
CDCA Plan and DRECP Preferred Alternative Crosswalk

DRECP Allocations (Equivalent/similar CDCA Multiple-Use Class)							
Land Use	*Wilderness (Class C)*	*ACEC, NLCS land that is not wilderness, SRMA or ERMA (Class L)*	*SRMA, ERMA (Class L, M, I)*	*Catellus (allocated, same as adjacent land-ACEC, NLCS, DFA, etc.)*	*Non-Designated Lands (Unclassified or Class M)*	*Variance (Unclassified or Class M)*	*DFA (Class I)*
		existing or previously approved facilities is allowed.		and not in conflict with deed restrictions.	existing or previously approved facilities is allowed.		retrofitting for newer technology, and operation of existing or previously approved facilities is allowed.
Communication Sites	Not allowed	New development is not allowed. Maintenance, retrofitting for newer technology, and operation of existing or previously approved facilities is allowed.		May be developed if approved by the State Director and not in conflict with deed restrictions.	New development may be allowed. Maintenance, retrofitting for newer technology, and operation of existing or previously approved facilities is allowed.		New development is allowed. Maintenance, retrofitting for newer technology, and operation of existing or previously approved facilities is allowed.
Fire Management	Routine fire suppression activities administered on public land are conducted in accordance with the BLM CDD Fire Management Plan.						

Table II.3-50
CDCA Plan and DRECP Preferred Alternative Crosswalk

DRECP Allocations (Equivalent/similar CDCA Multiple-Use Class)							
Land Use	*Wilderness (Class C)*	*ACEC, NLCS land that is not wilderness, SRMA or ERMA (Class L)*	*SRMA, ERMA (Class L, M, I)*	*Catellus (allocated, same as adjacent land- ACEC, NLCS, DFA, etc.)*	*Non-Designated Lands (Unclassified or Class M)*	*Variance (Unclassified or Class M)*	*DFA (Class I)*
Vegetation							
Native plant harvesting, seed collection and restoration	Non-commercial removal may be allowed by permit. Commercial removal may be allowed by permit if there is a demonstrated benefit to the species and/or ecosystem. Mechanical methods are not allowed in Wilderness.		Commercial and noncommercial removal of vegetation may be allowed by permit.				
Threatened and Endangered Plant Species	Will be protected.						
Sensitive Plant Species	Impacts will be avoided; no net unmitigated loss.						
Unusual Plant Assemblages	Unusual Plant Assemblages are described in the general vegetation CMAs or relevant land allocation CMA (e.g., DFA, ACEC, etc.)						
Vegetation Manipulation (mechanical or chemical control, exclosures, prescribed burning)	Not allowed.	May be allowed. Aerial broadcasting application of chemical controls will not be allowed.					

Table II.3-50
CDCA Plan and DRECP Preferred Alternative Crosswalk

DRECP Allocations (Equivalent/similar CDCA Multiple-Use Class)							
Land Use	*Wilderness (Class C)*	*ACEC, NLCS land that is not wilderness, SRMA or ERMA (Class L)*	*SRMA, ERMA (Class L, M, I)*	*Catellus (allocated, same as adjacent land- ACEC, NLCS, DFA, etc.)*	*Non-Designated Lands (Unclassified or Class M)*	*Variance (Unclassified or Class M)*	*DFA (Class I)*
Habitat Enhancement	Manual treatments may be allowed.	May be allowed.					
Land Tenure Adjustment	BLM may acquire lands through exchange, purchase, or donation, but may but not dispose of land.	BLM may acquire lands through exchange, purchase, or donation. Lands may be available for disposal through exchange if the exchange results in a net benefit to the values of the unit.	BLM may acquire lands through exchange, purchase, or donation. Lands are available for disposal to parties that will manage the land in accordance with the recreational values of the SRMA.	May not dispose of lands	Land sales may be allowed. BLM land may be disposed through exchange.		

Table II.3-50
CDCA Plan and DRECP Preferred Alternative Crosswalk

DRECP Allocations (Equivalent/similar CDCA Multiple-Use Class)							
Land Use	*Wilderness (Class C)*	*ACEC, NLCS land that is not wilderness, SRMA or ERMA (Class L)*	*SRMA, ERMA (Class L, M, I)*	*Catellus (allocated, same as adjacent land- ACEC, NLCS, DFA, etc.)*	*Non-Designated Lands (Unclassified or Class M)*	*Variance (Unclassified or Class M)*	*DFA (Class I)*
Livestock grazing	May be allowed	Grazing will be allowed subject to protection of sensitive resources. Permanent and temporary support facilities may be allowed subject to protection of sensitive resources.					
Mineral Exploration and Development	Exploration may be allowed in a manner compatible with preservation. Development subject to valid existing rights.	**Leasable Minerals:** May be allowed. No surface occupancy is required outside of non-designated lands, Variance lands and DFAs. **Locatable Minerals:** Subject to deed restrictions, location of mining claims is non-discretionary. Plans of operation will include actions to reduce potential impacts on sensitive receptors. Mitigation, subject to technical and economic feasibility will be required. **Saleable Minerals:** Continuous use of existing areas of sand and gravel extractions is allowed subject to BLM permits. New operations may be allowed, subject to deed restrictions.					
Motorized Vehicle Access/Transportation							
Motorized use	Not allowed, unless needed for emergency access, valid existing rights or provide for in legislation.	May be allowed.					
Road maintenance	May be allowed.						
Road construction	Not allowed.	May be allowed.					

Table II.3-50
CDCA Plan and DRECP Preferred Alternative Crosswalk

DRECP Allocations (Equivalent/similar CDCA Multiple-Use Class)							
Land Use	*Wilderness (Class C)*	*ACEC, NLCS land that is not wilderness, SRMA or ERMA (Class L)*	*SRMA, ERMA (Class L, M, I)*	*Catellus (allocated, same as adjacent land- ACEC, NLCS, DFA, etc.)*	*Non-Designated Lands (Unclassified or Class M)*	*Variance (Unclassified or Class M)*	*DFA (Class I)*
Railroads	New railroads are not allowed.	May be allowed if there are no other viable alternatives.			May be allowed.		
Aircraft	Non-emergency aircraft landing is not allowed.	Non-emergency aircraft landing is not allowed.	May be allowed.				
Recreation							
Low user density, nonmechanical recreation	Allowed.						
High user density, and/or mechanical recreation	Mechanical recreation is not allowed. High user density may be allowed.	May be allowed.					
Motorized Use	Not allowed	May be allowed.					
Construction, operation, maintenance of BLM recreational facilities	Not allowed.	May be allowed.					

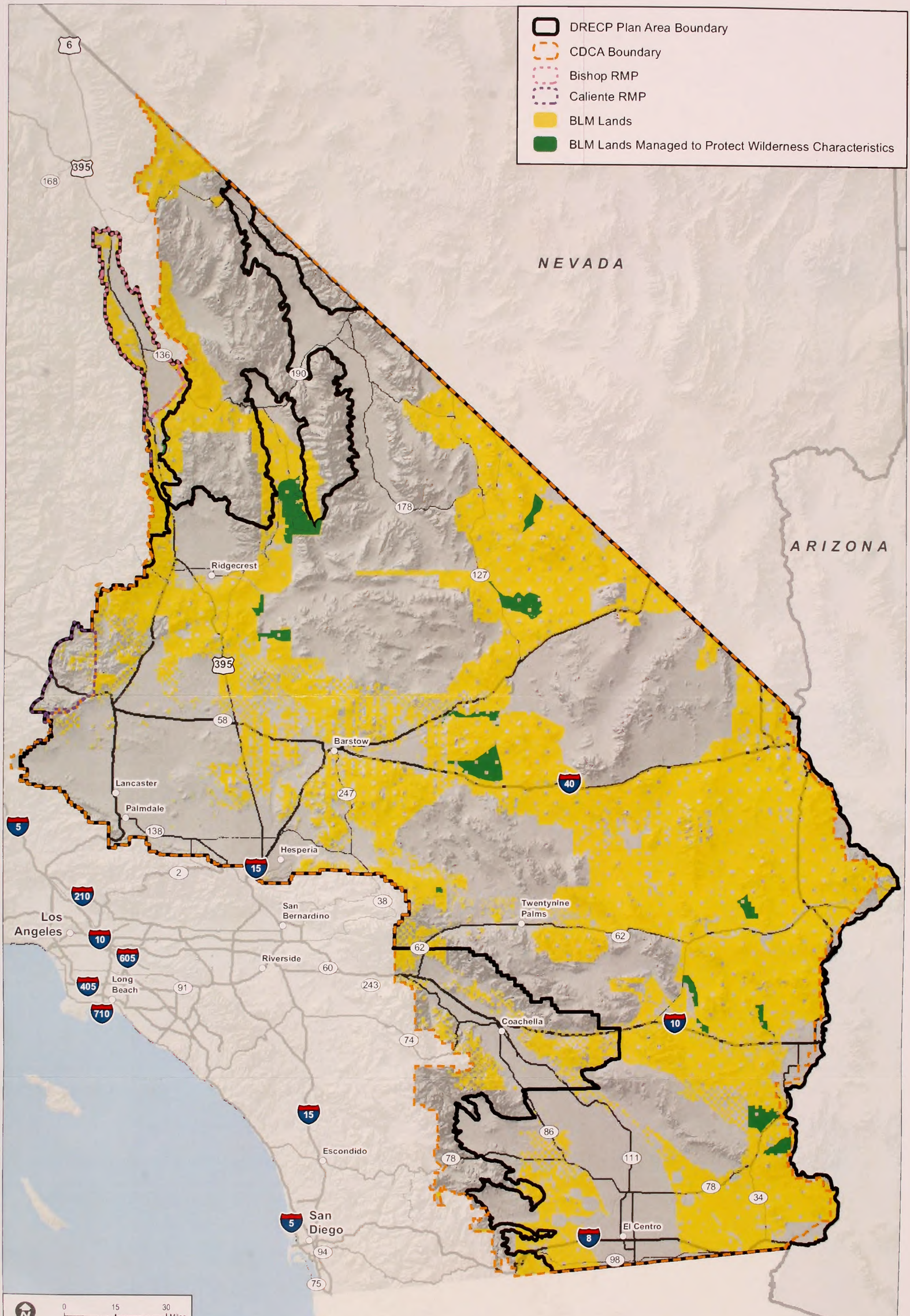
Table II.3-50
CDCA Plan and DRECP Preferred Alternative Crosswalk

DRECP Allocations (Equivalent/similar CDCA Multiple-Use Class)							
Land Use	*Wilderness (Class C)*	*ACEC, NLCS land that is not wilderness, SRMA or ERMA (Class L)*	*SRMA, ERMA (Class L, M, I)*	*Catellus (allocated, same as adjacent land-ACEC, NLCS, DFA, etc.)*	*Non-Designated Lands (Unclassified or Class M)*	*Variance (Unclassified or Class M)*	*DFA (Class I)*
Special recreation permits	May be allowed.						
Waste Disposal	Not allowed.	Not allowed.	Not allowed				
Wildlife Species and Habitat Management							
Threatened and Endangered Species	All species and their critical habitat will be protected.						
Special Status Species	Impacts will be avoided; no net unmitigated loss.						
Predator and Pest Control	Not allowed, except to alleviate public health hazards and to protect listed species.	May be allowed.					
Habitat Manipulation	May be allowed, subject to limitations described in "Vegetation" above.						
(Re)introduction of Native or Non-native Species	Introduction or reintroduction of native species is allowed except in wilderness areas where a determination must be made that it is consistent with wilderness values. Introduction of non-native species is allowed only to the extent that it benefits the desired habitat and species. Non-native species introductions are not permitted within wilderness areas.						
Wildlife drinkers/guzzlers	May be allowed.						
Wetland/Riparian Areas Management	Wetlands and riparian area impacts will be avoided or reduced to the extent possible.						

Table II.3-50
CDCA Plan and DRECP Preferred Alternative Crosswalk

DRECP Allocations (Equivalent/similar CDCA Multiple-Use Class)							
Land Use	*Wilderness (Class C)*	*ACEC, NLCS land that is not wilderness, SRMA or ERMA (Class L)*	*SRMA, ERMA (Class L, M, I)*	*Catellus (allocated, same as adjacent land- ACEC, NLCS, DFA, etc.)*	*Non-Designated Lands (Unclassified or Class M)*	*Variance (Unclassified or Class M)*	*DFA (Class I)*
Wild Horses and Burros	Identified populations of wild and free roaming horses and burros will be maintained in healthy, stable herds subject to controls to protect sensitive resources.						
Wilderness Characteristics	Wilderness characteristics will be identified and considered in management decisions.						
Rights of Way and Use Authorizations (other than utility-scale energy development or transmission)							
Potable water wells	Not allowed.	May be allowed.					
Monitoring Wells/Stations	May be allowed.	May be allowed.					
Extraction wells	Not allowed.	May be allowed subject to deed restrictions.					
Highway safety vertical or horizontal road alignments	May be allowed.	May be allowed.					
Access roads to private property	Not allowed.	May be allowed.					
Other use authorization	Not allowed.	May be allowed.					

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.3-6

Preferred Alternative – BLM Lands Managed to Protect Wilderness Characteristics

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_II\figII.3-6.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

II.3.2.4.2 Visual Resource Management Classes and National Conservation Lands outside of the DRECP

VRM Classes and National Conservation Land designations in the CDCA outside of the Planning Area are included in the discussions in Section II.3.2.2.1 and Section II.3.2.3.12.

II.3.3 NCCP Elements of the Preferred Alternative

The following provides an overview of the NCCP elements of the Preferred Alternative. Appendix N provides a more detailed description of the NCCP elements that apply to all alternatives described in Volume II. At the broadest level, the NCCP includes elements related to Covered Activities and conservation elements.

Each of the NCCP alternatives includes the full range of Covered Activities anticipated under the DRECP for each of the interagency Plan-wide alternatives. The Plan-wide description of Covered Activities serves as the description of Covered Activities for the NCCP alternatives.

The NCCPA requires that NCCPs provide for the conservation and management of Covered Species and natural communities on a landscape or ecosystem level through the creation and long-term management of habitat reserves and the application of other equivalent conservation measures. To reflect the conservation that would occur under the NCCP, the NCCP elements of each alternative define the following means of providing conservation within Reserve Design Lands:

- An **NCCP Conceptual Plan-Wide Reserve Design** defines the areas that are considered to be the highest priority for biological conservation. These priority conservation areas include species population centers and landscape linkages that provide both connectivity between large habitat blocks and areas for potential movement in response to climate change. These priority conservation areas include both BLM lands and other lands, including private land and nonfederal public land. These priority conservation areas are consistent with those identified in the interagency Plan-wide alternatives.
- A **DRECP NCCP Reserve Design**, nested within the NCCP Conceptual Plan-Wide Reserve Design. BLM lands and non-BLM Lands included in the DRECP NCCP Reserve Design would receive long-term protection and would be conserved and managed to preserve and enhance Natural Communities and habitat for Covered Species.

  The DRECP NCCP Reserve Design identifies those lands within BLM LUPA conservation designations that would be protected, maintained, and managed

to preserve their conservation value for Covered Species for at least the duration of the NCCP. Identified BLM Conservation Lands cover areas of key biological importance in the DRECP NCCP Reserve Design and in the NCCP Conceptual Plan-Wide Reserve Design. A Management Agreement and/or Durability Instrument placed on these key areas provides long-term conservation assurance. Durability Instruments can be applied as advanced mitigation or to areas of non-acquisition compensation for a specific project.

Within non-BLM lands, areas identified within the DRECP NCCP Reserve Design would be given a high priority for conservation through the purchase of private lands or conservation easements from willing sellers. Once acquired, these lands would be added to the NCCP Reserve, and would be managed for the long-term for the values for which they were acquired.

- **Biological conservation actions** are DRECP actions that contribute to the conservation and management of Covered Species and their habitats. DRECP biological conservation actions include BLM LUPA management actions, DRECP CMAs (additional species–specific management actions on BLM lands, and avoidance, minimization and compensatory mitigation actions for Covered Activities), creation and management of the NCCP Reserve, and implementation of the DRECP MAMP.
- **Other conservation actions**, would occur outside of the DRECP NCCP Reserve Design and NCCP Conceptual Plan-Wide Reserve Design and include the maintenance and management of all of the BLM LUPA conservation designation lands in accordance with the BLM LUPA management actions specified for each conservation designation. The BLM LUPA also establishes the allowable uses that may be authorized within each conservation designation, and describes the DRECP Plan-wide CMAs that are applied to avoid, minimize and compensate for any effects that result from authorizing the established allowable uses.

  Biological conservation actions on BLM Conservation Lands outside of the NCCP Conceptual Plan-Wide Reserve Design are essential for DRECP conservation. Conservation actions on these lands include BLM LUPA Management Actions that will maintain the significant ecological and scientific values that conserve Covered Species, natural communities, habitat connectivity between existing LLPAs and large intact landscape blocks, ecosystem processes, and potential climate refugia.

  DRECP will deliver the complete set of BLM Conservation Lands within the DRECP Plan-Wide Reserve Design Envelope at the time the LUPA ROD is approved.

Taken together, the Biological conservation actions on BLM lands and the establishment of the DRECP NCCP reserve during implementation of the plan, will contribute to the recovery

of DRECP Covered Species and natural communities, landscape connectivity, ecosystem processes, and other landscape features that promote resiliency in contemplation of climate change. Reserve design features and other conservation actions within the NCCP alternatives are consistent with and nested within the Plan-Wide Reserve Design Envelope in the interagency Plan-wide alternatives, but differ in terms of how reserve design features are grouped within the NCCP Conceptual Plan-Wide Reserve Design and the DRECP NCCP Reserve Design. Table II.3-51 summarizes the NCCP elements of the Preferred Alternative. As shown in Table II.3-51, the DRECP NCCP Reserve Design covers approximately 425,000 acres of BLM and non-BLM lands. Figure II.3-7 depicts the NCCP for the Preferred Alternative.

Table II.3-51
NCCP for the Preferred Alternative

NCCP Components	Acreage
DFAs	**2,024,000**
Study Area Lands	**183,000**
Future Assessment Areas	128,000
Special Analysis Areas	42,000
DRECP Variance Lands	13,000
DRECP Plan-Wide Reserve Design Envelope	**14,921,000**
Existing conservation areas	7,662,000
NCCP Conceptual Plan-Wide Reserve Design	1,847,000
Inside the DRECP NCCP Reserve Design	425,000
BLM LUPA conservation designations	314,000
Biological Conservation Priority Areas on non-BLM lands	111,000
Outside the DRECP NCCP Reserve Design	1,422,000
BLM LUPA conservation designations	868,000
Biological Conservation Priority Areas on non-BLM lands	554,000
BLM LUPA conservation designations outside the NCCP Conceptual Plan-Wide Reserve Design	3,726,000
Biological Conservation Planning Areas on non-BLM lands	1,685,000
Urban Areas, Other Lands, and Undesignated Areas	**5,457,000**
Plan Area Total	**22,585,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

The DRECP Monitoring and Adaptive Management Program (MAMP) is an integral and important component for implementing the DRECP NCCP. The DRECP MAMP

monitoring framework will facilitate the development of a comprehensive monitoring program and schedule that will collect information to accomplish the following biological monitoring activities:

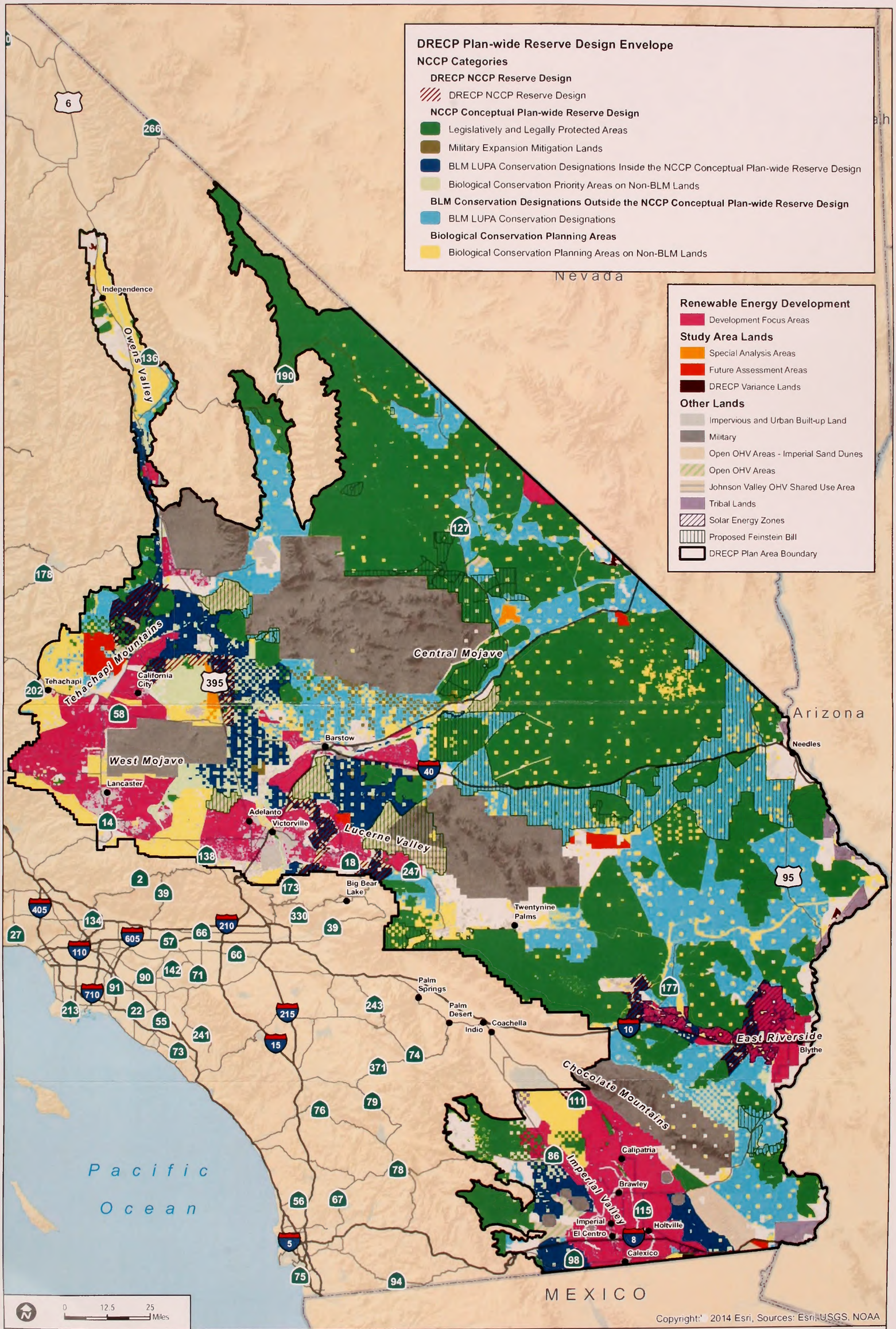
1. Monitor the status of biological resources addressed by the plan, including Covered Species and natural communities,
2. Account for and assess authorized take,
3. Report on the establishment of habitat reserves or other measures that provide equivalent conservation of Covered Species,
4. Evaluate the adequacy of the DRECP conservation strategies, mitigation measures, and land management activities,
5. Evaluate the effectiveness of the plan in meeting the conservation objectives of the plan,
6. To provide information to direct the adaptive management program, and
7. Map and track land use changes in the plan area that may affect habitat values or Covered Species, and allow evaluation of the effects of climate change within the DRECP Conservation Area.

Monitoring will be implemented where biologically appropriate and necessary within the DRECP Conservation Area and will leverage existing and ongoing biological monitoring programs. The MAMP will focus on monitoring lands added to the NCCP Reserve and habitat management and compensation actions throughout the DRECP Conservation Area.

In addition, compliance monitoring will assist with tracking compliance with the plan and the implementation agreement by the wildlife agencies and implementing entities and to ensure that mitigation and conservation measures are being implemented roughly proportional in time and extent to the impact on habitat or Covered Species authorized under the plan.

Certain definitions in the Glossary of Terms are particularly relevant to the NCCP elements of DRECP and are repeated here for clarification:

Biological Conservation Actions. DRECP actions that contribute to the conservation and management of Covered Species and their habitats. DRECP biological conservation actions include BLM LUPA management actions, DRECP CMAs (additional species-specific management actions on BLM lands, and avoidance, minimization and compensatory mitigation actions for Covered Activities), creation and management of the NCCP Reserve, and implementation of the DRECP MAMP.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.3-7

Preferred Alternative - Natural Community Conservation Plan

INTENTIONALLY LEFT BLANK

BLM LUPA Conservation Designations (also known as BLM Conservation Lands or BLM Conservation Allocations). Administrative designations that would include National Conservation Lands, ACEC, and Wildlife Allocation designations on BLM-administered land. BLM Wilderness Areas, Wilderness Study Areas, National Historic Trails, and Wild and Scenic River designations (existing and proposed) are included as part of the existing Legislatively and Legally Protected Areas (LLPAs). The BLM LUPA conservation designations were identified through the planning process and considered the biological and nonbiological resource values across the Plan Area.

For the NCCP, subsets of the BLM LUPA conservation designations are depicted in Figure II.3-7 and summarized in Table II.3-51. As shown, BLM LUPA conservation designations occur within and outside the NCCP Conceptual Plan-Wide Reserve Design and within and outside the DRECP NCCP Reserve Design. The BLM LUPA conservation designation lands occur within their entirety within the DRECP Plan-Wide Reserve Design Envelope.

DRECP NCCP. The NCCP has been prepared to provide for the conservation and management of Covered Species and to address the impacts of Covered Activities. The DRECP NCCP BGOs, the DRECP NCCP Reserve Design, BLM Conservation Lands, DFAs and CMAs are the essential elements of the DRECP NCCP. The DRECP NCCP is informed by, and is designed to implement a substantial portion of, the DRECP Plan-Wide Conservation Strategy and a substantial portion of the NCCP Conceptual Plan-Wide Reserve Design. The DRECP NCCP provides the basis for the issuance of take authorizations for Covered Activities under Section 2835 of the NCCPA.

DRECP NCCP BGOs. Refer to Step-Down Biological Objectives in the Glossary of Terms.

Interagency Plan-Wide Conservation Priority Areas. Mapped areas of key biological importance within the DRECP Plan-Wide Reserve Design Envelope for each alternative within which protection and management of some lands for Covered Species is necessary to contribute to DRECP Plan-Wide BGOs, achieve Step-Down Biological Objectives, and mitigate the effects of incidental take of Covered Species. Compensatory mitigation actions will be focused primarily within the Interagency Plan-wide Conservation Priority Areas.

For the NCCP, subsets of the Interagency Plan-Wide Conservation Priority Areas are depicted in Figure II.3-7.

NCCP Reserve. LLPAs and lands within the DRECP NCCP Reserve Design that are added to the NCCP Reserve. A portion of the BLM Conservation Lands within the DRECP NCCP Reserve Design will be added to the DRECP NCCP Reserve by applying tools that provide durable, long-term assurances that the lands will be protected and managed for Covered Species. A portion of the private lands and non-federal public lands within the DRECP NCCP Reserve Design will be added to the NCCP Reserve by purchasing them

from willing sellers. All LLPAs by definition have durable, long-term protections and are included in the NCCP Reserve.

II.3.4 GCP Elements of the Preferred Alternative

The USFWS has developed a General Conservation Plan (GCP) that provides the framework for a streamlined permitting process for renewable energy development by nonfederal applicants in the Plan Area. The proposed GCP is an "umbrella" type of programmatic HCP, and the USFWS will consider issuing permits to applicants who submit project proposals that demonstrate consistency with the terms and conditions of the GCP. Any permits issued under the GCP "umbrella" would authorize incidental take of Covered Species in conjunction with DRECP Covered Activities on nonfederal lands within the DFAs and DRECP reserve design. Within the reserve design, the Conservation Planning Areas are nonfederal lands from which permittee mitigation lands would be acquired from willing sellers by fee title or conservation easement. In addition, permittees may be allowed in limited circumstances to fund non-acquisition mitigation measures on BLM LUPA conservation designations and on nonfederal Existing Conservation Lands. The proposed GCP is set forth in Appendix M and summarized below. Appendix M documents how the proposed GCP would meet incidental take issuance criteria, and how applicants would demonstrate consistency with the GCP to obtain severable incidental take permits.

II.3.4.1 Overview of the Nonfederal GCP Lands of the Preferred Alternative

The proposed GCP component of the Preferred Alternative includes all nonfederal lands within the DRECP Development Focus Areas and Conservation Planning Areas, as well as nonfederal inholdings within Existing Conservation Lands and BLM-administered lands in the Plan Area; these lands comprise the GCP Permit Area. Nonfederal lands include privately owned lands and lands owned by state and local jurisdictions. Within the GCP Permit Area, Covered Species would be incidentally taken in conjunction with Covered Activities. The larger GCP Plan Area encompasses the GCP Permit Area as well as Priority Conservation Areas outside the GCP Permit Area where permittee non-acquisition mitigation measures may be implemented (i.e., BLM-administered lands corresponding to the DRECP NCCP Reserve Design). The USFWS proposed GCP, and CEC and CSLC application materials for incidental take permits under the GCP, are included in Appendix M. The proposed CEC Permit Area consists of nonfederal lands where CEC would have project licensing authority, which in some cases may include CSLC lands, but it does not have a specific spatial boundary. The proposed CSLC Permit Area consists of CSLC school lands and sovereign lands. The conservation strategy and Covered Activities under the GCP would be consistent with the DRECP. Table II.3-52 provides a summary of the Preferred Alternative within the GCP component of the DRECP; Figure II.3-8 depicts the Preferred Alternative within the GCP area. As shown in Table II.3-52, the GCP portion of the Plan Area

covers a total of 1,632,000 acres of DFAs on nonfederal lands (81% of the total DFAs in the Preferred Alternative). The biological resources environmental setting/affected environment for the GCP portion of the Plan Area is described in Section III.7.11. The impact analysis for the Preferred Alternative on nonfederal lands within the GCP area is provided in Section IV.7.3.2.4.

Table II.3-52
Preferred Alternative within the GCP

Alternative Components	Acreage[1]
DFAs (Nonfederal Lands Only)	**1,632,000**
Study Area Lands (Nonfederal Lands Only)	**77,000**
Future Assessment Areas	70,000
Special Analysis Areas	7,000
DRECP Plan-Wide Reserve Design Envelope (Nonfederal Lands Only)	**2,714,000**
Existing conservation areas	434,000
BLM LUPA conservation designations	1,200,000
Conservation Planning Areas	1,080,000

Notes: Urban areas, Other Lands, and Undesignated Areas also occur on nonfederal lands but are not reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

II.3.4.2 Overview of the GCP Permitting Process

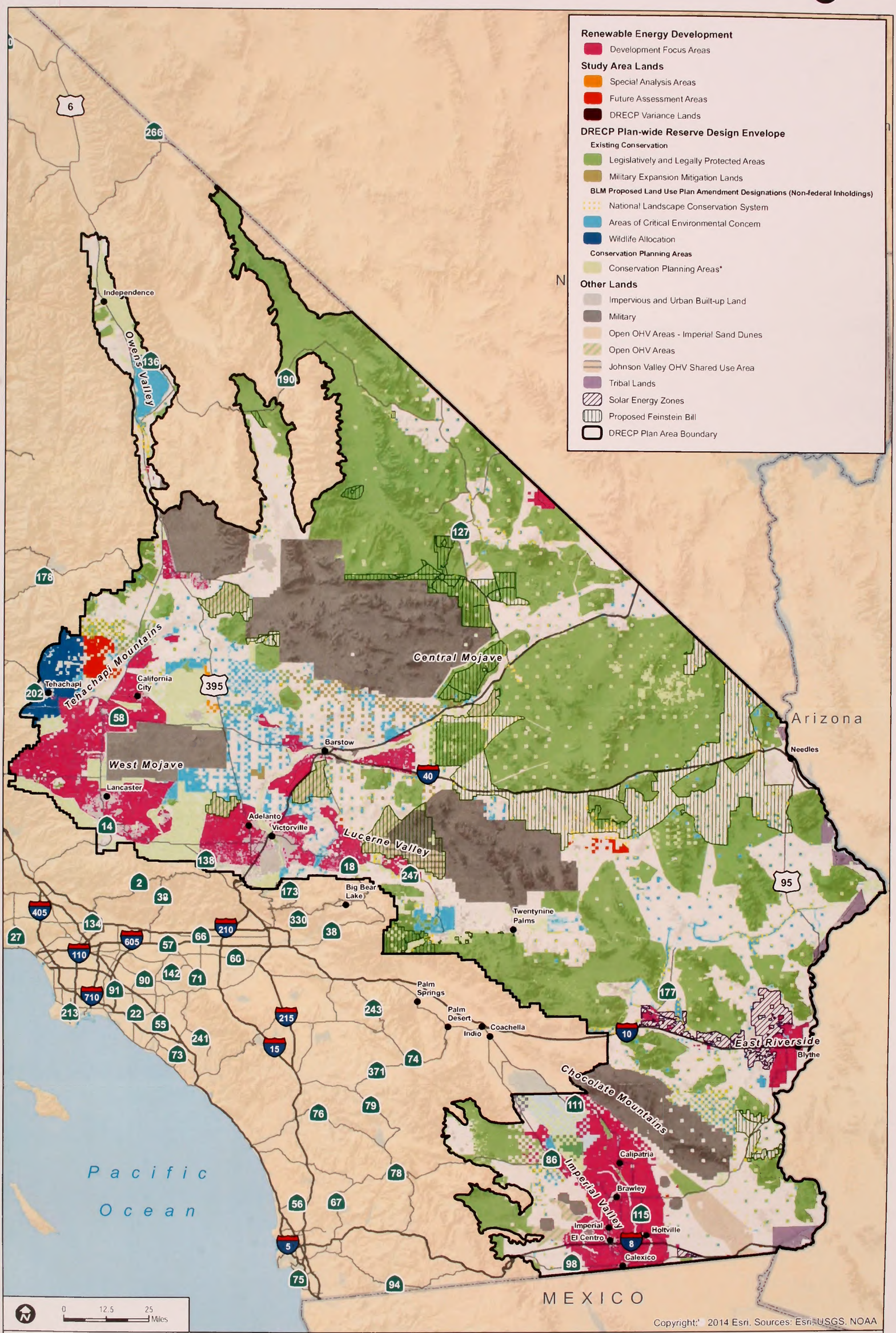
The USFWS's proposed action under NEPA in the DRECP Draft EIR/EIS is to decide whether to approve the GCP, and to issue severable incidental take permits to CEC, CSLC, and other future applicants under the GCP. The Draft EIR/EIS thus incorporates a combined GCP/EIS in one document. The Draft EIR/EIS analyzes the impacts of the Plan-wide DRECP Preferred Alternative, of which the USFWS's proposed GCP is an integral component, as well as four other action alternatives that each contain a GCP component, and a No Action Alternative. The description of the GCP as proposed in the Preferred Alternative is carried throughout each of the other alternatives, which differ as to the number and configuration of nonfederal acres that would be impacted under each alternative.

Two applicants, the CEC and CSLC, have requested incidental take permits as part of the DRECP. CEC and CSLC have renewable energy project licensing or landowner jurisdiction, respectively, over portions of the nonfederal lands within the Plan Area. The CEC and CSLC application materials are included for public review in Appendix M. USFWS will consider issuing permits to CEC and CSLC, and to future renewable energy applicants, after the DRECP and its GCP component are approved and a ROD for a Final EIR/EIS is signed.

The GCP is based on the DRECP's comprehensive conservation strategy for 37 proposed Covered Species, including BGOs, CMAs, and a Plan-wide reserve design. The DRECP Executive Policy Group and DRECP Coordination Group, both of which will include the USFWS as members, would oversee implementation of the GCP as part of the overall DRECP. Among other responsibilities, the DRECP Coordination Group would manage compensation land acquisition and management, and the DRECP MAMP, supported in part by mitigation fees paid by GCP permittees for compensation.

The USFWS's intent is to avoid redundancy in this Draft EIR/EIS as much as possible. Thus, the GCP appendix refers to appropriate sections of the Draft EIR/EIS for descriptions of Covered Activities, BGOs, CMAs, baseline conditions, effects analyses, and other information relevant to Covered Species. The GCP estimates the maximum level of incidental take of each Covered Species that would result from DRECP Covered Activities on nonfederal lands within the DFAs, and the amount of CMAs that would be required to minimize and mitigate the effects of that take to the maximum extent practicable. Together, the GCP in Appendix M and the Draft EIR/EIS contain all the mandatory elements of a HCP/GCP, as well as adequate information to demonstrate compliance of the proposed GCP with ESA Section 10(a)(2)(B) issuance criteria.

The CEC and CSLC applications include supplementary materials for public review in Appendix M that provide each agency's program-specific project description and incidental take analysis. The applications incorporate the GCP component of the DRECP by reference and summarize relevant sections of particular importance that need to be highlighted for their respective permit requests. Future applicants under the GCP would also use this approach. The supplementary materials for each application will require attachments with additional information on the level of impacts (i.e., incidental take) to Covered Species expected by the proposed project(s), the amount of mitigation lands that would be acquired, and how the proposed permit would fulfill all issuance criteria (see Section 7.1, Application Process, of Appendix M for a full list of required attachments). The USFWS would begin to consider permit applications under the GCP after a ROD for the Final EIR/EIS is signed, and would continue to consider permit applications until an application exceeds the maximum take levels analyzed for the GCP.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.3-8

Preferred Alternative - General Conservation Plan

INTENTIONALLY LEFT BLANK

Applicants may be state agencies, local governments (such as cities or counties), or individual landowners or project proponents. Seven local jurisdictions in the Plan Area are members of the DRECP Stakeholder Committee (the Counties of Imperial, Inyo, Kern, Los Angeles, Riverside, and San Bernardino, and the City of Lancaster), and may consider applying for incidental take permits in the future, after the DRECP is approved. State agencies and local governments, if issued a permit under the GCP, would be able to extend their incidental take authorization to qualified third-party renewable energy applicants over which the agency or local government has jurisdiction. Applicants must submit to the USFWS a complete application package containing a federal Fish and Wildlife Permit Application Form 3-200-56, GCP Supplementary Application Form, $100.00 application fee (waived for government agencies), a proposed HCP and incidental take analysis, and an analysis of the proposed permit issuance under NEPA. For the HCP and NEPA requirements, the application need only refer to appropriate sections of the DRECP Final EIR/EIS (if it is approved) and GCP. As required by ESA Section 10(c), the USFWS will publish a Notice of Availability in the Federal Register announcing a 30-day public comment period for each application received under the GCP.

To issue a permit under the GCP, the USFWS would need to determine whether the application is consistent with the GCP, and with the impact (incidental take) analysis contained in the DRECP Final EIR/EIS and the USFWS's internal ESA Section 7 consultation on the GCP. In addition to those documents, the administrative record for each permit decision would include a USFWS "Findings and Recommendations" statement (Findings) that summarizes how the application meets ESA incidental take issuance criteria and/or Eagle Act take issuance criteria, as appropriate, and a separate Findings that summarizes how the application meets NEPA requirements.

As a requirement of the GCP, proponents of Covered Activities on nonfederal lands under the GCP that will likely impact bird and bat Non-Covered Species during construction, operations, and maintenance will develop and implement a project-specific bird and bat conservation strategy (BBCS) for non-covered bird and bat species (see Appendix M). The BBCS will be created on a project-by-project basis by incorporating a variety of available measures that are applicable to the specific project and that together meet the approval of the DRECP Coordination Group for sufficiently avoiding and minimizing, and adaptively monitoring and managing impacts to bird and bat Non-Covered Species.

If the GCP is approved and a ROD for the DRECP Final EIR/EIS is signed, the Imperial Irrigation District (IID) may consider applying for a permit under the GCP for incidental take of Covered Species associated with their proposed Salton Sea Incremental Habitat Plan (Incremental Plan). Because the Incremental Plan is still in development, IID will decide at a later time whether to apply for a permit. Please refer to Appendix M for a brief overview of the IID Incremental Plan.

All portions of the Salton Sea's exposed playa have a potential for solar and geothermal renewable energy development, including a proven resource in the Known Geothermal Resource Area in the south/southeast portion of the sea. Successful implementation of a renewable energy funding component for the long-range Salton Sea Restoration Plan and the Incremental Plan would require the development of an adequate electrical transmission system to carry the energy outside of the Salton Sea basin. As mitigation for renewable energy Covered Activities, the Incremental Plan would include development of a wildlife habitat mosaic in conjunction with renewable energy development (primarily geothermal) in selected areas of the exposed playa. The types of habitat constructed to mitigate for the impacts of renewable energy development would vary based on identified need for specific habitat types and site logistics, and could vary from shallow water to deeper water, and from permanently inundated to pulse or seasonally flooded; areas of mesic habitat may also be possible.

II.4 ALTERNATIVE 1

Alternative 1 is one of five action alternatives considered and analyzed in the Desert Renewable Energy Conservation Plan (DRECP or Plan) and Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The description of Alternative 1 is first provided at an interagency level (Section II.4.1), which describes all Plan elements of the alternative. After the interagency description, the individual elements of the alternative are described, including the Bureau of Land Management (BLM) Land Use Plan Amendment (LUPA) elements of the DRECP (Section II.4.2), the Natural Community Conservation Plan (NCCP) elements of the DRECP (Section II.4.3), and the General Conservation Plan (GCP) elements of the DRECP (Section II.4.4).

II.4.1 Interagency Description of Alternative 1

The interagency description of Alternative 1 includes the following main sections: Overview of Alternative 1, Conservation Strategy, Monitoring and Adaptive Management Program, Description of the Covered Activities, and Plan Implementation. The description of Alternative 1 for the DRECP and EIR/EIS encompasses the overall conservation strategy and description of Covered Activities on federal and nonfederal lands (i.e., state, county, city, and privately owned lands) within the Plan Area.

II.4.1.1 Overview of Alternative 1

The following provides a Plan-wide overview of Alternative 1. Alternative 1 integrates the renewable energy and resource conservation with other existing uses in the Plan Area and includes BLM LUPA elements, NCCP elements, and GCP elements.

Under Alternative 1 for the DRECP, an interagency conservation strategy for the Plan Area would be established that includes a streamlined process for the permitting of renewable energy and transmission development on both federal and nonfederal lands and a BLM LUPA providing Conservation and Management Actions (CMAs) for resources throughout the Plan Area on BLM-administered lands. Like the Preferred Alternative, Alternative 1 would consist of Development Focus Areas (DFAs), Study Area Lands, and the DRECP Plan-Wide Reserve Design Envelope (including existing conservation areas, BLM LUPA conservation designations, and Conservation Planning Areas), Impervious and Urban Built-up Lands, Other Lands (including Military, Open Off-Highway Vehicle [OHV] Areas, Tribal lands), and Undesignated Areas. These areas are defined in Section II.3.1, Interagency Description of the Preferred Alternative.

The BLM LUPA (Section II.4.2) provides the land use plan amendment description related to these components on BLM-administered lands, and it also describes the Special Recreation Management Areas (SRMAs) designations and other CMAs for resources on

BLM-administered lands. The NCCP (Section II.4.3) and GCP for nonfederal lands (Section II.4.4) describe how these Plan components would provide for incidental take authorization of Covered Species under Section 2835 of the state Natural Community Conservation Planning Act and Section 10 of the federal Endangered Species Act.

Alternatives under the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA), including Alternative 1, must consider potential impacts on all aspects of the human environment, both the natural environment and the built environment, including biological and nonbiological resources. Additionally, Appendix M contains all the required components of a GCP.

Figure II.4-1 provides the Plan-wide map for Alternative 1.

Table II.4-1 provides an overview summary for Alternative 1. In summary, Alternative 1 would include approximately 1,070,000 acres of DFAs. Study Area Lands include 37,000 acres of DRECP Variance Lands. The DRECP Plan-Wide Reserve Design Envelope would include 7,662,000 acres of existing conservation areas, 6,090,000 acres of BLM LUPA conservation designations, and 1,287,000 acres of Conservation Planning Areas. Of the over 19 million acres of the Plan Area outside of Military Lands, BLM Open OHV Areas, and Tribal Lands, there are approximately 13,565,000 acres of federally owned or administered lands and 5,420,000 of nonfederal lands. The BLM LUPA elements of Alternative 1 are described in Section II.4.2; the NCCP elements of Alternative 1 are described in Section II.4.3; and the GCP elements of Alternative 1 addressing nonfederal lands are described in Section II.4.4. Exhibit II.4-1 graphically displays the components of Alternative 1.

Table II.4-1
Interagency DRECP Plan-Wide Alternative 1

Alternative Components	Acreage
DFAs	**1,070,000**
Study Area Lands	**37,000**
DRECP Variance Lands	37,000
DRECP Plan-Wide Reserve Design Envelope	**15,039,000**
Existing conservation areas	7,662,000
BLM LUPA conservation designations	6,090,000
Conservation Planning Areas	1,287,000
Urban Areas, Other Lands, and Undesignated Areas	**6,439,000**
Impervious and Urban Built-up Land	534,000
Military Lands	3,019,000
BLM Open OHV Areas	264,000
Imperial Sand Dunes, including the BLM Open OHV Area	132,000

Table II.4-1
Interagency DRECP Plan-Wide Alternative 1

Alternative Components	Acreage
Johnson Valley OHV Shared Use Area	56,000
Tribal Lands	129,000
Undesignated Areas	2,306,000
Plan Area Total	**22,585,000**

Notes: This Plan-wide alternative summary includes both federal lands and nonfederal lands. The summary specific to BLM-administered lands is provided in Section II.4.2, and the summary specific to nonfederal lands is provided in Section II.4.4. Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. The BLM LUPA would also designate approximately 2,537,000 acres of SRMAs in addition to the 193,000 acres of existing SRMAs, which are BLM designation overlays that overlap portions of the components provided in this table and described in Section II.4.2. Impervious and urban built-up lands occur within BLM LUPA conservation designations and DFAs were not explicitly included in the urban category reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

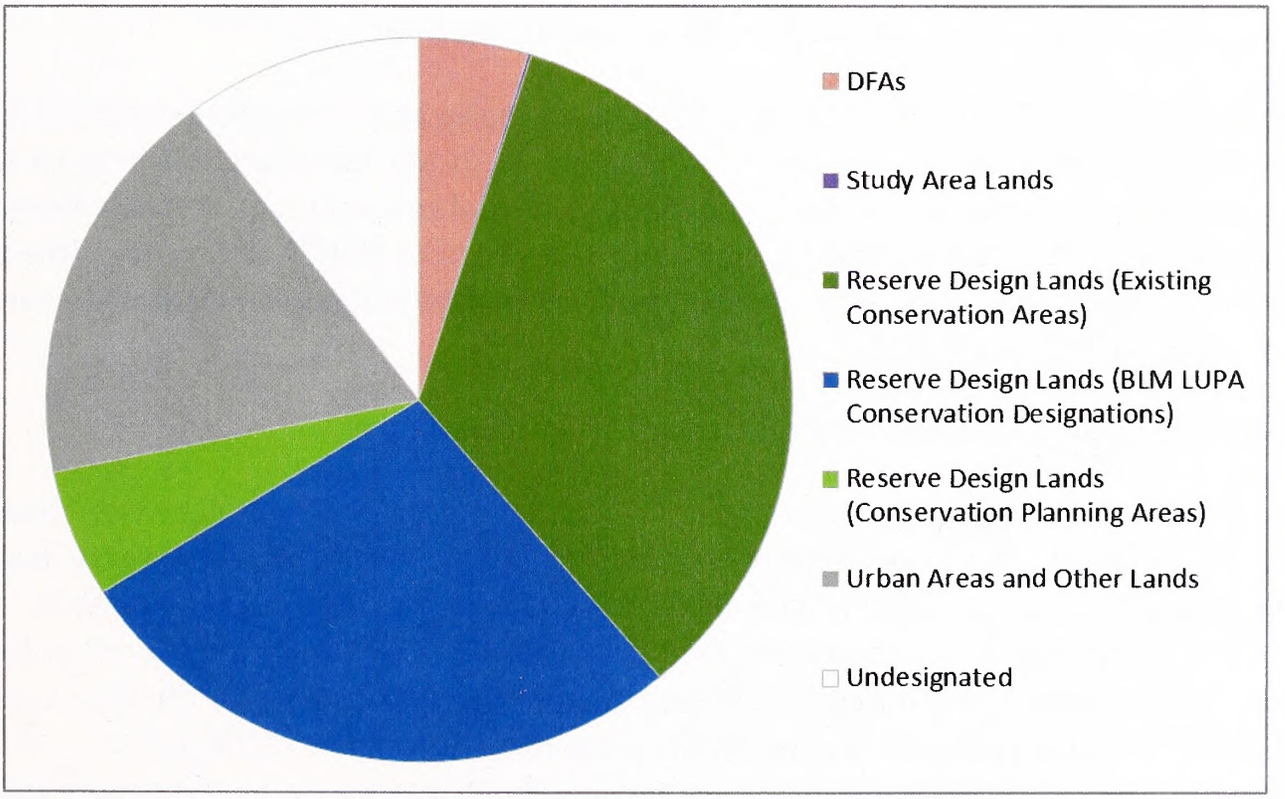


Exhibit II.4-1 Components of Alternative 1

II.4.1.2 Conservation Strategy

The Plan-wide conservation strategy for the DRECP was developed through the planning process described in Volume I, Chapter I.3. The process included: (1) establishing the

conservation focus on biological, cultural, recreation, and visual resources; (2) gathering baseline information; (3) identifying Biological Goals and Objectives (BGOs) and goals and objectives for nonbiological resources on BLM-administered land; (4) developing a comprehensive reserve design; (4) developing biological CMAs and CMAs for nonbiological resources on BLM land; and (6) developing a Monitoring and Adaptive Management Program. The approach and structure of the conservation strategy for Alternative 1 is the same as the conservation strategy for the Preferred Alternative.

II.4.1.2.1 Overview of the Structure and Content of the Biological Conservation Strategy for Alternative 1

The structure of the conservation strategy under Alternative 1 is the same as that for the Preferred Alternative as described in Section II.3.1.2.

II.4.1.2.2 DRECP Proposed Covered Species List

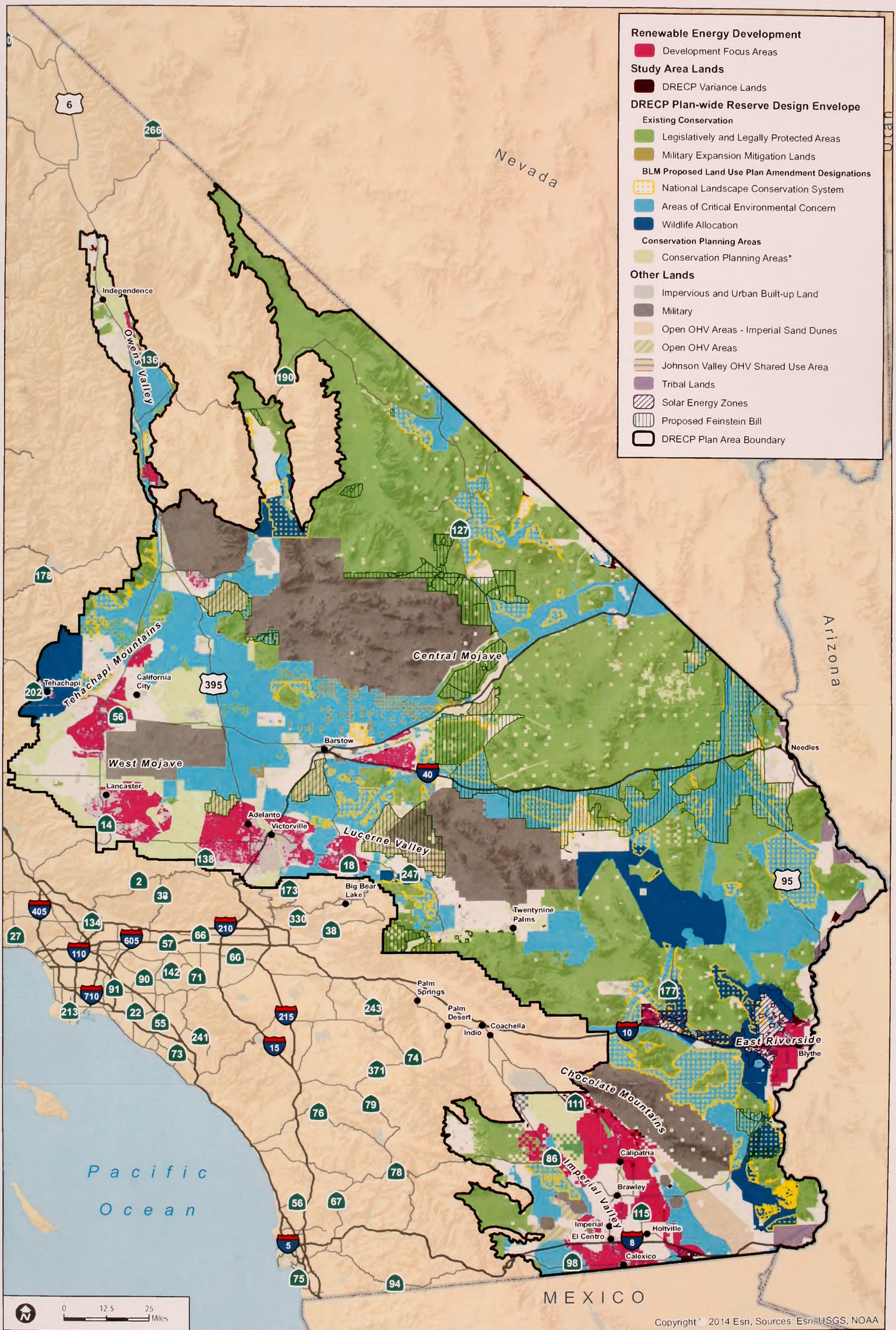
The proposed Covered Species list would be the same under Alternative 1 as it is under the Preferred Alternative. See Section II.3.1.2.2 for the proposed Covered Species list.

II.4.1.2.3 Plan-Wide Biological Goals and Objectives

The Plan-wide BGOs provide the broad guiding principles and define the desired outcome of the DRECP conservation strategy. The Plan-wide BGOs are described in Section I.3.4.3 and are provided in Appendix C at the landscape, natural community, and species levels. The Plan-wide BGOs are common to and apply to each of the DRECP alternatives. The Step-Down Biological Objectives describe the contribution of DRECP implementation towards achieving the Plan-wide BGOs.

II.4.1.2.4 DRECP Plan-Wide Reserve Design Envelope

The DRECP Plan-Wide Reserve Design Envelope for Alternative 1 was developed based on the biological reserve design process described in Section I.3.4.4. The reserve design is the mapped expression of Plan-wide BGOs. Additionally, an interagency Plan-Wide Conservation Priority Area has been identified. This area represents the highest priority area for the creation and long-term management of habitat reserves for the conservation of the 37 proposed Covered Species and representative examples of the natural communities and processes that support them in the Plan Area. The interagency Plan-Wide Conservation Priority Area was the basis for the NCCP Conceptual Plan-Wide Reserve Design of each alternative.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities

FIGURE II.4-1
Alternative 1

INTENTIONALLY LEFT BLANK

Overall, the DRECP Plan-Wide Reserve Design Envelope for Alternative 1 would cover 79% of the Plan Area (excluding military lands, tribal lands, and BLM Open OHV Areas), which includes 7,662,000 acres of existing conservation areas, 6,090,000 acres of BLM LUPA conservation designations, and 1,287,000 acres of Conservation Planning Areas. Approximately half of the DRECP Plan-Wide Reserve Design Envelope for Alternative 1 is made up of existing conservation areas (i.e., Legislatively and Legally Protected Areas [LLPAs] and Military Expansion Mitigation Lands [MEMLs]). Approximately 40% of the DRECP Plan-Wide Reserve Design Envelope for Alternative 1 is made up of existing and proposed BLM LUPA conservation designations including combinations of Areas of Critical Environmental Concern (ACECs), National Landscape Conservation System (NLCS), and Wildlife Allocations, and approximately 9% of the DRECP Plan-Wide Reserve Design Envelope for Alternative 1 is comprised of Conservation Planning Areas.

The interagency Plan-Wide Conservation Priority Area within the reserve design envelope covers approximately 1,732,000 acres. This includes 1,545,000 acres of BLM LUPA conservation designations (1,126,000 acres on BLM-administered lands and 419,000 acres of non-BLM inholdings) and 188,000 acres of Conservation Planning Areas.

The DRECP Plan-Wide Reserve Design Envelope for Alternative 1 is comprised of an interconnected network of federal and nonfederal (both public and private) lands that spans seven counties, multiple ownerships, and ten ecoregion subareas of the Mojave and Colorado/Sonoran deserts of California. Figure II.4-2 shows the Alternative 1 reserve design envelope, and Appendix G provides figures of the reserve design envelope for each ecoregion subarea in the Plan Area. Table II.4-2 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 1 by county. Table II.4-3 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 1 by ownership. Table II.4-4 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 1 by ecoregion subarea.

Table II.4-2
DRECP Plan-Wide Reserve Design Envelope for Alternative 1 by County

County	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Imperial County	274,000	692,000	144,000	1,109,000
Inyo County	1,921,000	538,000	144,000	2,603,000
Kern County	135,000	556,000	236,000	927,000
Los Angeles County	6,000	37,000	278,000	321,000
Riverside County	982,000	711,000	44,000	1,736,000
San Bernardino County	4,145,000	3,556,000	436,000	8,137,000

Table II.4-2
DRECP Plan-Wide Reserve Design Envelope for Alternative 1 by County

County	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
San Diego County	199,000	0	6,000	205,000
Total	**7,662,000**	**6,090,000**	**1,287,000**	**15,039,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. These include both existing and proposed conservation designations. The reserve design envelope also includes an interagency Plan-wide Conservation Priority Area that covered 1,732,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.4-3
DRECP Plan-Wide Reserve Design Envelope for Alternative 1 by Ownership Class

Ownership Class	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Federal Lands				
BLM-administered land	3,279,000	4,869,000	—	8,148,000
Other federal land	3,949,000	9,000	64,000	4,023,000
Nonfederal Lands				
Private land	31,000	976,000	946,000	1,953,000
State and local public land	403,000	235,000	277,000	915,000
Total	**7,662,000**	**6,090,000**	**1,287,000**	**15,039,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. These include both existing and proposed conservation designations. The reserve design envelope also includes an interagency Plan-Wide Conservation Priority Area that covered 1,732,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.4-4
DRECP Plan-Wide Reserve Design Envelope for Alternative 1 by Ecoregion Subarea

Ecoregion Subarea	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Cadiz Valley and Chocolate Mountains	842,000	1,452,000	54,000	2,348,000
Imperial Borrego Valley	355,000	439,000	140,000	934,000
Kingston and Funeral Mountains	1,767,000	528,000	84,000	2,379,000
Mojave and Silurian Valley	786,000	503,000	53,000	1,342,000
Owens River Valley	32,000	154,000	92,000	277,000
Panamint Death Valley	1,253,000	239,000	20,000	1,511,000
Pinto Lucerne Valley and Eastern Slopes	739,000	506,000	76,000	1,321,000
Piute Valley and Sacramento Mountains	423,000	443,000	29,000	894,000
Providence and Bullion Mountains	1,305,000	769,000	132,000	2,205,000
West Mojave and Eastern Slopes	162,000	1,057,000	607,000	1,827,000
Total	**7,662,000**	**6,090,000**	**1,287,000**	**15,039,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. These include both existing and proposed conservation designations. The reserve design envelope also includes an interagency Plan-Wide Conservation Priority Area that covered 1,732,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Existing Conservation Areas

The Plan Area encompasses existing conservation areas that include LLPAs and MEMLs, which include designations such as Wilderness Areas, Wilderness Study Areas, National Parks, National Preserve, and California State Parks. LLPAs serve as the building blocks of the reserve design with existing boundaries and management regimes around which the BLM LUPA conservation designations and Conservation Planning Areas were designed. Existing conservation areas are the same for all alternatives. A full description of the existing conservation areas is provided in Section I.3.4.4 under the reserve design process. The existing conservation areas of the reserve design are shown on Figure II.4-2 and the ecoregion subarea maps of the reserve design in Appendix G.

BLM LUPA Conservation Designations

The BLM LUPA conservation designations are a critical component of the reserve design for the DRECP. These include existing and newly proposed NLCS designations, ACEC designations, and Wildlife Allocations. The land unit names included in BLM LUPA conservation designations in the reserve design by subarea are provided in Section II.4.2 and Appendix L. The BLM LUPA conservation designations component of the reserve design is shown on Figure II.4-2 and the ecoregion subarea maps of the reserve design in Appendix G.

Conservation Planning Areas

Conservation Planning Areas are the portions of the reserve design located outside of existing conservation areas and BLM-administered lands. Conservation Planning Areas include both public and private lands. Reserve areas would be created within Conservation Planning Areas by acquiring land or conservation easements from willing sellers within the Conservation Planning Areas to provide compensatory mitigation for Covered Activities to contribute to meeting BGOs. Conservation Planning Areas within the interagency Plan-Wide Conservation Priority Area have been prioritized for conservation. The Conservation Planning Areas component of the reserve design is shown on Figure II.4-2 and the ecoregion subarea maps of the reserve design in Appendix G.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.4-2

Alternative 1 - Plan-wide Reserve Design Envelope

INTENTIONALLY LEFT BLANK

II.4.1.2.5 Biological CMAs

The biological CMAs under Alternative 1 would be the same as those for the Preferred Alternative described in Section II.3.1.2.5, except as described in the following discussion. The CMAs related to BLM LUPA conservation designations under Alternative 1 are described in Section II.4.2 and in the BLM unit-specific worksheets in Appendix L.

- **Exceptions to the Preferred Alternative CMAs.** The Plan-wide CMAs, landscape-level CMAs, Natural Communities and Covered Species CMAs in the DFAs, Natural Communities and Covered Species CMAs in the Reserve, and the Transmission-specific CMAs under the heading "Exceptions to the Preferred Alternative CMAs" will specify the CMA code (e.g., RIP-WET-1) that corresponds to the specific CMA listed in the biological CMAs for the Preferred Alternative that will not be implemented for Alternative 1.
- **Additional CMAs to the Preferred Alternative.** The Plan-wide CMAs, landscape-level CMAs, Natural Communities and Covered Species CMAs in the DFAs, Natural Communities and Covered Species CMAs in the Reserve, and the Transmission-specific CMAs will list the additional biological CMAs under the heading "Additional CMAs to the Preferred Alternative" that will be implemented specifically for Alternative 1 in addition to the CMAs described for the Preferred Alternative.

The following provides the biological CMAs for Alternative 1, including the CMAs listed in the Preferred Alternative that will not be implemented and any additional CMAs that will specifically be implemented for Alternative 1 in addition to the biological CMAs in the Preferred Alternative.

II.4.1.2.5.1 Avoidance and Minimization CMAs

Alternative 1 would implement avoidance and minimization CMAs including the Avoidance and Minimization CMAs in the Preferred Alternative with the exceptions and additions as described in Section II.4.1.2.5.2 through Section II.4.1.2.5.6.

II.4.1.2.5.2 Plan-Wide Avoidance and Minimization CMAs

Under Alternative 1 the Plan-Wide Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.2) will be implemented with no exceptions or additions.

II.4.1.2.5.3 Landscape-Level Avoidance and Minimization CMAs

Under Alternative 1 the Landscape-Level Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.3) will be implemented with no exceptions or additions.

II.4.1.2.5.4 Natural Communities and Covered Species Avoidance and Minimization CMAs in DFAs

Under Alternative 1, the Natural Communities and Covered Species Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.4) will be implemented with no exceptions or additions.

II.4.1.2.5.5 Natural Communities and Covered Species Avoidance and Minimization CMAs in the Reserve

Under Alternative 1, the Natural Communities and Covered Species Avoidance and Minimization CMAs in the Reserve listed in the Preferred Alternative (Section II.3.1.2.5.5) will be implemented with no exceptions or additions.

II.4.1.2.5.6 Transmission Avoidance and Minimization CMAs

Under Alternative 1, the Transmission Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.6) will be implemented with no exceptions or additions.

II.4.1.2.5.7 Compensation CMAs

Under Alternative 1, the Compensation CMAs listed in the Preferred Alternative (Section II.3.1.2.5.7) will be implemented with no exceptions or additions.

II.4.1.3 Monitoring and Adaptive Management Program

The Monitoring and Adaptive Management Program for Alternative 1 would be the same as is described under the Preferred Alternative (see Section II.3.1.3).

II.4.1.4 Overview Description of Covered Activities

This section provides a description of the distribution, magnitude, and scope of activities under the DRECP for Alternative 1 under the DRECP. This describes how Alternative 1 would meet the renewable energy goals outlined in Section I.3.5. Renewable energy development technologies addressed under the DRECP include solar thermal, photovoltaic (PV) solar, wind, geothermal, and transmission.

On nonfederal lands, renewable energy and transmission siting, construction, operation, and decommissioning activities and conservation activities would be considered Covered Activities for incidental take permits under Section 2835 of the state Natural Community Conservation Planning Act and Section 10 of the federal Endangered Species Act. On BLM-administered lands, the BLM LUPA addresses renewable energy and transmission siting, construction, operation, and decommissioning activities, conservation activities, and other

land use management decisions. The following describes the renewable energy-generation-, transmission-, and conservation-related activities that would occur on both federal and nonfederal lands. The specific land use management decisions addressed by the BLM LUPA are described in Section II.4.2.

The section includes a summary of DFA distribution, and an estimated acreage associated with each technology. The description is subdivided by technology: solar, wind, geothermal and transmission. For brevity, the description of the activities associated with siting, constructing, operating, and decommissioning are not repeated in this section as the information is identical to that which is provided in Section II.3.1.4.

In Alternative 1, renewable energy-related activities covered by the Plan would be confined to the DFAs. If the activities are not located within a DFA, they would no longer be considered a Covered Activity and would not enjoy the benefits the Plan affords. Generation development is focused in the West Mojave and Eastern Slopes, Imperial Borrego Valley, and Cadiz Valley and Chocolate Mountains ecoregion subareas, and around Barstow, with smaller areas in the Owens River Valley ecoregion subarea. Figure II.4-3 shows the DFAs for Alternative 1, and Appendix G provides figures of the DFAs for each ecoregion subarea in the Plan Area.

Table II.4-5a provides a DFA acreage summary by ecoregion subarea and by ecoregion subunit (i.e., finer-grained geographic subdivisions within each ecoregion subarea). Figure II.4-3 shows the corresponding ecoregion subunits.

Table II.4-5a
Alternative 1 Development Focus Areas by Ecoregion Subarea and Subunit

Ecoregion Subarea	Ecoregion Subunit	DFA Acreage
Cadiz Valley and Chocolate Mountains	Cadiz - 1	—
	Cadiz - 2	99,000
	Cadiz - 3	500
Imperial Borrego Valley	Imperial - 1	218,000
	Imperial - 2	224,000
	Imperial - 3	—
Mojave and Silurian Valley	Mojave - 1	39,000
	Mojave - 2	500
Owens River Valley	Owens -1	22,000
Pinto Lucerne Valley and Eastern Slopes	Pinto - 1	95,000
	Pinto - 2	—
Piute Valley and Sacramento Mountains	Piute - 1	—

Table II.4-5a
Alternative 1 Development Focus Areas by Ecoregion Subarea and Subunit

Ecoregion Subarea	Ecoregion Subunit	DFA Acreage
Providence and Bullion Mountains	Providence - 1	12,000
	Providence - 2	—
West Mojave and Eastern Slopes	West Mojave - 1	4,000
	West Mojave - 2	118,000
	West Mojave -3	30
	West Mojave - 4	111,000
	West Mojave - 5	127,000
	West Mojave - 6	—
	Total DFA Acreage	**1,070,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

The distribution of different generation technologies varies depending on underlying factors that affect each technology. The method used to estimate the distribution of generation impacts across the Plan Area simultaneously accounts for the area available to each technology, potential interactions between technologies, and variation in the relative development potential of different DFAs. A more detailed description of the methodology is discussed in Chapter I.3 with additional detail provided in Appendix F. In the following section each technology is discussed separately.

Table II.4-5b includes a summary of the DFAs by technology type by county. The technology type listed indicates what technologies are assumed feasible in the DFA. If multiple technologies are listed that indicates that more than one renewable energy technology could be feasible in that DFA. DFAs suitable for solar only are the most common in most counties. DFAs suitable for solar and geothermal together make up the largest technology type category in Imperial County, whereas DFAs that can support both solar and wind make up the largest technology type category in San Bernardino County. Geothermal is only proposed in Imperial and San Bernardino counties under Alternative 1. Table II.4-5c includes a summary of the DFAs by ownership. For Alternative 1, nearly 91% of the DFAs are on nonfederal lands, and over 9% of the DFAs are on federal lands.

Table II.4-5b
Alternative 1 Development Focus Areas by Technology Type by County

Technology Type Category by County	DFA Acreage
Imperial County	**442,000**
Geothermal	100,000
Solar	136,000
Solar and geothermal	201,000
Solar and wind	60
Solar, wind, and geothermal	5,000
Inyo County	**22,000**
Solar	22,000
Kern County	**122,000**
Solar	71,000
Solar and wind	51,000
Los Angeles County	**111,000**
Solar	111,000
Riverside County	**99,000**
Solar	75,000
Solar and wind	24,000
San Bernardino County	**274,000**
Geothermal	500
Solar	83,000
Solar and wind	190,000
San Diego County	—
Total	**1,070,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.4-5c
Alternative 1 Development Focus Areas by Ownership Class

Ownership Class	DFA Acreage
Federal Lands	
BLM-administered land	81,000
Other federal land	17,000

Table II.4-5c
Alternative 1 Development Focus Areas by Ownership Class

Ownership Class	DFA Acreage
Nonfederal Lands	
Private land	916,000
State and local public land	55,000
Total	**1,070,000**

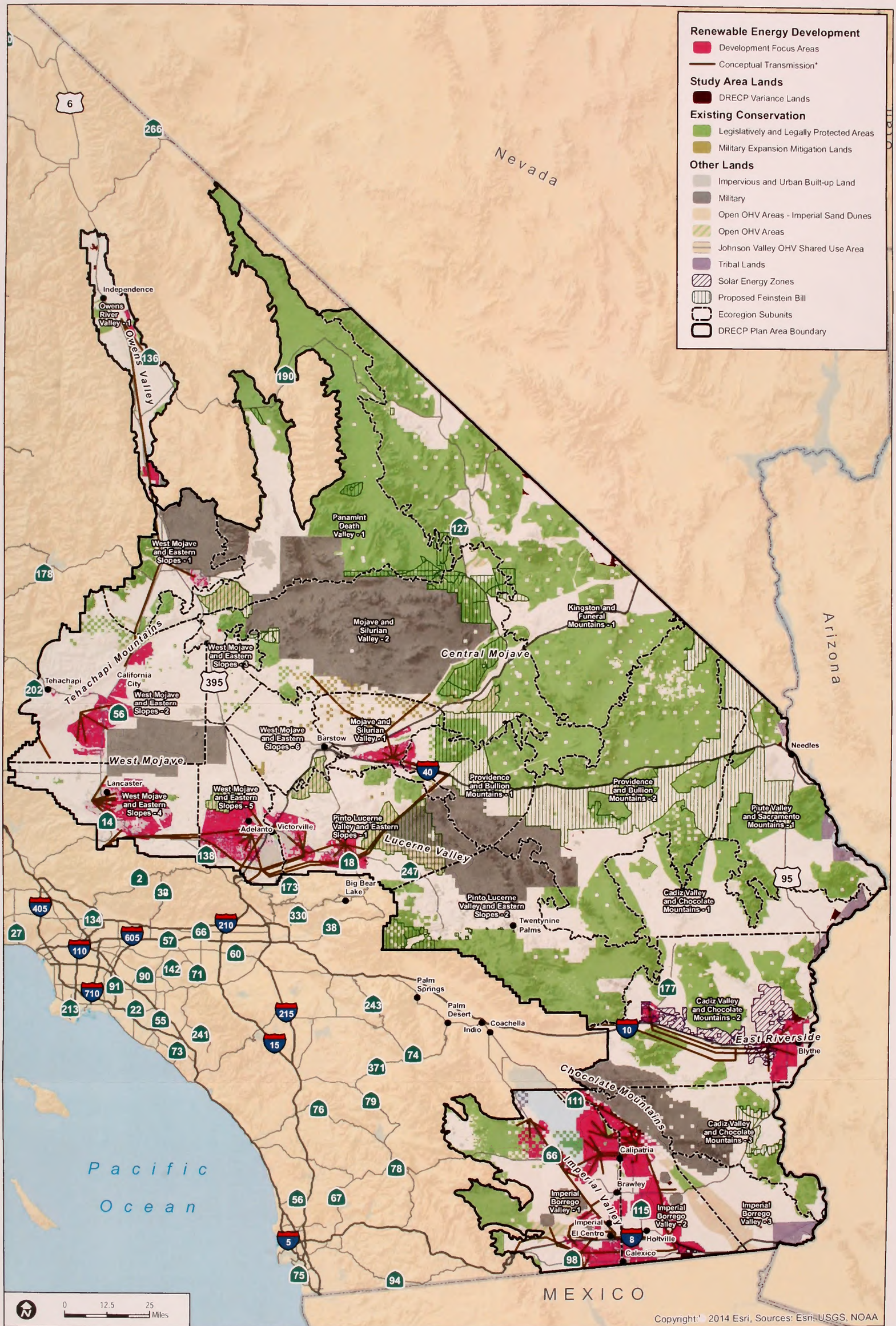
Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

The following sections describe the distribution of the DFAs along with an estimate of the total project area required for each technology and the associated area of permanent disturbance, a summary of which is provided in Table II.4-6. The estimated distribution of generation activities in the following sections aims to ensure that the DRECP evaluates a plausible magnitude of effects for each covered biological resource, such that the Plan would offer adequate minimization and mitigation for each covered technology.

Table II.4-6
Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies Under Alternative 1

	Estimated Permanent Disturbance (Acres)	Total Project Area (Acres)
Solar	115,000	115,000
Wind	2,000	38,000
Geothermal	17,000	17,000
Distributed generation	14,000	14,000
Total	**148,000**	**184,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*Transmission lines shown are based on the DRECP Transmission Technical Group (TTG) Report, which provides a conceptual transmission plan for the DRECP alternatives and is not intended for siting or alignment purposes

FIGURE II.4-3

Alternative 1 - Plan-wide DFAs

INTENTIONALLY LEFT BLANK

II.4.1.4.1 Solar Energy Generation (Including Utility-Scale Distributed Generation)[1]

This section provides an estimate of the size of impacts for Covered Activities associated with solar and utility-scale distributed generation projects that would be covered by the Plan under Alternative 1. Construction and operational activities are identical to those described in Section II.3.1.4.1 and listed in Table II.3-21 (Preferred Alternative). Although the area available to solar generation would be more extensive in the DFAs than for other technologies, not all DFAs were considered suitable for solar development. Consequently, it was assumed that solar development would occur within the subset of DFAs identified in Appendix G.

Solar projects can range from small-scale developments of a few megawatts (MWs) that occupy tens of acres up to 1,000 MW projects that occupy thousands of acres. Given the programmatic nature of the DRECP, extensive detailed analysis of effects that are project-specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the acreage that would be affected by Covered Activities within different ecoregion subareas of the Plan Area (Table II.4-7). For the purpose of assessing the magnitude of impacts from ancillary facilities, construction impacts, and infrastructure, solar projects were assumed to be a mixture of 100 MW projects and 400 MW projects to represent the diversity of projects currently under review and construction. Similarly all ground-mounted distributed generation projects were assumed to be 20 MW projects.

When estimating the impacts of solar projects, it was assumed that the construction of projects would result in the loss of all habitat within the boundary of the project footprint. Two reasons are given for this: (1) Unlike other technologies, solar projects are generally fenced to exclude wildlife and result in modification to natural processes for the life of the project; and (2) although some vegetation may be preserved at some project locations, this is not universal, and conditions of service often lead to the removal of vegetation to reduce fire risk. Further, the extensive removal, modification, and grading within the project boundary, even if vegetation is not completely removed, may lead to edge effects that effectively modify the remaining vegetation communities. Therefore, the acreage requirements for roads, operation and maintenance facilities, and switchyards required for each facility are included in the overall estimated boundary of the solar project. Similarly, short-term impacts, such as construction and laydown yards, were assumed to be within the final boundary of the project and therefore subsumed within the boundary estimate.

---

1 For the purpose of analysis, all distributed generation was considered to be located in the same areas as utility-scale solar, therefore requiring the same ancillary facilities (i.e., Covered Activities) as utility-scale solar projects.

Table II.4-7 summarizes the long-term impacts for solar technologies, and provides the following information by ecoregion subarea:

- Total Long-Term Ground Disturbance – Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of all potential solar generation facility footprints, including operations and maintenance building, switchyards, and road construction impacts. All ancillary facilities were assumed to be within the boundary of the Plan Area and result in total permanent disturbance to the entire project site. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.
- Total Project Area – An estimate of the total area occupied by a given project. For area-intensive technologies like solar generation, the total project area is identical to the total permanent ground-conversion impacts.

Table II.4-7
Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 1

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	21,000	4,000	17,000
Imperial Borrego Valley	47,000	2,000	45,000
Kingston and Funeral Mountains	—	—	—
Mojave and Silurian Valley	5,000	—	
Owens River Valley	6,000	4,000	2,000
Panamint Death Valley	—	—	—
Pinto Lucerne Valley and Eastern Slopes	12,000	2,000	10,000
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	2,000	300	2,000
West Mojave and Eastern Slopes	36,000	1,000	35,000
Total	**129,000**	**14,000**	**115,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

II.4.1.4.2 Wind Energy Generation

This section provides an estimate of the size of impacts for activities associated with wind projects that would be covered by the DRECP. Construction and operational

activities are identical to those described in Section II.3.1.4.2 and listed in Table II.3-23 of the Preferred Alternative.

The area available to wind development was constrained by several factors including areas where construction was considered infeasible and areas where turbine construction has been precluded by ordinance or general policy. Consequently, it was assumed that wind development would occur within the subset of DFAs identified in Appendix G.

Wind projects can range from small-scale developments of a few MWs that occupy tens of acres up to several hundred MW projects that occupy thousands of acres. Given the programmatic nature of the DRECP, extensive detailed analysis of effects that are project-specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the acreage that would be affected by Covered Activities within different ecoregion subareas of the Plan.

Wind projects result in a relatively diffuse impacts spread across a wide area. Turbines are widely spaced and connected by permanent access roads, and transmission infrastructure, with centralized maintenance facilities and switchyards. Unlike solar, not all the land within the boundary of a wind project was assumed to be permanently disturbed by project activities. For the purpose of analysis, estimates of disturbed acreage were the sum of the estimated acreage required for turbine pads, roads, ancillary facilities, and supporting infrastructure. Short-term construction activities, such as laydown yards, were assumed to result in permanent disturbance within the project boundary, and were also included in the estimate of permanently disturbed acreage. In addition to estimates of ground disturbance, the area likely to be impacted by the operation of the turbine rotors (airspace) was also estimated. For analysis purposes, turbines were grouped into conceptual projects of up to 200 MWs to enable an estimation of impacts from ancillary facilities, roads, turbines, etc. Table II.4-8 summarizes the long-term impacts for wind technologies and provides the following information by ecoregion subarea:

- Total Project Area – An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area (e.g., wind energy generation), the permanent impacts are distributed over a larger area.
- Estimated Long-Term Ground Disturbance – Estimated total acreage affected by Covered Activities. This is effectively a summation of all potential wind generation facility footprints, including individual turbine pad, operations and maintenance building, switchyard, and road construction impacts. This estimate also includes the additional impacts that would occur as a consequence of construction activities, including construction areas, laydown yards, and storage facilities. Due to the difficulty of restoration in a desert environment, all activities

that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.

- Turbine Rotor Swept Area – An estimate of the total aerial acreage affected by the rotation of turbine blades while a wind facility is operating.

Table II.4-8
Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subarea – Alternative 1

Ecoregion Subarea	Project Area (acres)			Long-Term Disturbance (acres)			Rotor Swept Area (acres)		
	Plan-Wide	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	5,000	1,000	4,000	300	100	200	200	30	100
Imperial Borrego Valley	—	—	—	—	—	—	—	—	—
Kingston and Funeral Mountains	—	—	—	—	—	—	—	—	—
Mojave and Silurian Valley	—	—	—	—	—	—	—	—	—
Owens River Valley	—	—	—	—	—	—	—	—	—
Panamint Death Valley	—	—	—	—	—	—	—	—	—
Pinto Lucerne Valley and Eastern Slopes	13,000	1,000	12,000	800	100	700	400	40	400
Piute Valley, Sacramento Mountains	—	—	—	—	—	—	—	—	—
Providence and Bullion Mountains	—	—	—	—	—	—	—	—	—
West Mojave and Eastern Slopes	21,000	—	21,000	1,000	—	1,000	600	—	600
Total	**38,000**	**2,000**	**36,000**	**2,000**	**100**	**2,000**	**1,000**	**100**	**1,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

II.4.1.4.3 Geothermal Energy Generation

This section provides an estimate of the size of impacts for Covered Activities associated with geothermal projects that would be covered by the DRECP. Construction and operational activities are identical to those described in Section II.3.1.4.3 and listed in Table II.3-25 of the Preferred Alternative.

The area available to geothermal development was limited to areas in the Imperial Borrego Valley and part of the Owens River Valley ecoregion subareas, where geothermal resources are concentrated. Consequently, it was assumed that geothermal development would occur within the subset of DFAs identified in Appendix G.

Geothermal projects would be more limited in size (in the Plan Area) than other renewable energy projects. Recent projects vary from about 50 MW to 160 MW in size. For analysis within the DRECP, geothermal projects were assumed be typically 50 MW in size. Given the programmatic nature of the Plan, extensive detailed analysis of effects that are project-specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the estimated acreage that would be affected by Covered Activities within different ecoregion subareas of the Plan.

Geothermal projects result in extensive impacts associated with the power block and ancillary facilities, with more dispersed impacts resulting from the well-fields. Well heads that inject and collect heat transfer fluids are widely spaced and connected by permanent access roads and pipelines to the centrally located power block and steam turbine facilities. All land within the boundary of a geothermal project was assumed permanently disturbed by project activities. Estimates of disturbed acreage include the acreage required for well head pads, roads, ancillary facilities, and supporting infrastructure, and also includes the land fragmented by the roads, pipelines, and well pads in the well-field, which was assumed to retain no conservation value. Short-term construction activities, such as laydown yards, were assumed to result in permanent disturbance within the project boundary, and are also included in the estimate of permanently disturbed acreage. Table II.4-9 summarizes the long-term impacts for geothermal technologies and provides the following information by ecoregion subarea:

- Estimated Long-Term Ground Disturbance – Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of all potential geothermal energy generation facility footprints, including operations and maintenance building, switchyard, and road construction impacts. This estimate also includes the additional impacts that occur as a consequence of construction activities, and the fragmented land within the well-field. Due to the difficulty of restoration in a desert environment, all activities that

result in vegetation removal or disturbance were considered permanent for the purpose of analysis.

- Total Project Area – An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area (e.g., geothermal energy generation), the permanent impacts are distributed over a larger area.

Table II.4-9
Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Alternative 1

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	—	—	—
Imperial Borrego Valley	17,000	4,500	12,500
Kingston and Funeral Mountains	—	—	—
Mojave and Silurian Valley	—	—	—
Owens River Valley	—	—	—
Panamint Death Valley	—	—	—
Pinto Lucerne Valley and Eastern Slopes	—	—	—
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	—	—	—
West Mojave and Eastern Slopes	—	—	—
Total	**17,000**	**4,500**	**12,500**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.4.1.4.4 Transmission

The transmission Covered Activities components for Alternative 1 would be the same as those described for the Preferred Alternative in Section II.3.1.4.4.

The subarea distribution of major transmission, substation, and gen-tie impacts described in Table II.4-10 provides an estimate of right-of-way (ROW) requirements in acres from which it was possible estimate the relative impacts of transmission-related Covered Activities described in Section II.3.1.4.4.

- Estimated Long-Term Ground Disturbance – Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of transmission impacts. This estimate also includes impacts that occur as a consequence of construction activities, including

construction areas, laydown yards, and storage facilities. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.

- Total Project Area – An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area, the permanent impacts are distributed over a larger area.

Table II.4-10
Right-of-Way Requirements for Transmission Associated with Renewable Energy Development by Ecoregion Subarea – Alternative 1

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	7,000	5,000	3,000
Imperial Borrego Valley	16,000	4,000	13,000
Kingston and Funeral Mountains	—	—	—
Mojave and Silurian Valley	2,000	900	1,000
Owens River Valley	2,000	1,000	1,000
Panamint Death Valley	—	—	—
Pinto Lucerne Valley and Eastern Slopes	4,000	1,000	3,000
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	600	400	300
West Mojave and Eastern Slopes	1,000	200	1,000
Total	**34,000**	**12,000**	**21,000**

Notes: All transmission disturbance data reflect intermediate disturbance values used for comparative purposes in the analysis. Disturbance area estimates reflecting the most recent Transmission Technical Group Report are provided in Appendix K.
The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.4.1.4.4.1 Transmission Outside the Plan Area

Transmission outside the Plan Area is not a Covered Activity under the DRECP. The potential direct effects of potential future transmission outside the Plan Area associated with development of covered renewable energy projects and transmission facilities inside the Plan Area are, however, programmatically described and analyzed in Volume IV of the DRECP for each environmental resource category. This section presents a description of the transmission facilities outside the Plan Area that are programmatically analyzed in Volume IV.

The assumptions used to calculate acreages of effects for transmission and substation facilities in the DRECP Plan Area are the same as those used to calculate effects of

transmission and substations outside the Plan Area, and are described in Section II.3.1.4.4. However, approval of the DRECP would not result in any approval of the potential future transmission lines outside the Plan Area that are discussed here. All future transmission lines outside the Plan Area would require new applications by the developer or utility, compliance with CEQA and NEPA as appropriate, and approvals from the developer (if municipal utilities or irrigation districts) or from the California Public Utilities Commission (if investor-owned utilities) prior to construction.

Table II.4-11 provides the acreage of effects for transmission and substations outside of the DRECP boundary. For ease of analysis, the transmission lines and substations have been clustered into general geographic boundaries.

Table II.4-11
Right-of-Way Requirements for Transmission Outside the DRECP Plan Area Associated with Renewable Energy Development – Alternative 1

Geographic Area	Transmission	
	Acres	*Miles*
San Diego area	2,000	94
Los Angeles area	2,000	83
Central Valley	16,000	274
Rialto/Moreno Valley/Devers area	12,000	484
Total Outside Plan Area	**32,000**	**935**

Source: Transmission Technical Group Report, provided as Appendix K.

The new transmission lines outside the Plan Area are presented in the following list.

- **San Diego Area:** Two 500-kilovolt (kV) lines from the Imperial Valley Substation to the existing Sycamore Substation (San Diego).
- **Los Angeles Area:**
  - One 500 kV line from the existing Vincent Substation (just inside the DRECP boundary) to the existing Lighthipe Substation.
  - One 500 kV from the existing Vincent Substation (just inside the DRECP boundary) to the existing Mesa Substation.
- **Central Valley:**
  - One 500 kV transmission line from the Whirlwind Substation (just inside the DRECP boundary) to the Pacific Gas and Electric (PG&E) Midway 500 kV Substation.
  - Two 500 kV lines from the PG&E Midway Substation to the Tesla/Tracy Substation.

- **Rialto/Moreno Valley/Devers Area:**
  - One 500 kV line from the Devers Substation to Vincent Substation.
  - One 500 kV line from the Devers Substation to Rancho Vista Substation.
  - One 500 kV line from Colorado River Substation to existing Valley Substation. About 103 miles of this line would be outside the DRECP boundary.
  - Three 500 kV lines from Midway X (Imperial Valley) to Devers Substation. About 200 miles of this corridor would be outside the DRECP boundary.

II.4.1.5 Plan Implementation

Plan implementation for Alternative 1 would be the same as that for the Preferred Alternative as described in Section II.3.1.5.

II.4.2 BLM LUPA Elements of Alternative 1

The BLM LUPA elements of Alternative 1 are the same elements as the Preferred Alternative (see Figure II.4-4).

As shown in Table II.4-12, approximately 9,834,000 acres within the Plan Area occur within the BLM LUPA on BLM-administered lands. Under Alternative 1, approximately 81,000 acres of DFAs occur on BLM-administered lands.

In this area, existing conservation areas on BLM lands totals 3,264,000 acres including 3,260,000 acres of LLPAs. All of the BLM LLPAs are Wilderness or Wilderness Study Areas and are managed to meet the statute of the Wilderness Act of 1964 and to ensure these congressionally designated areas meet DRECP conservation goals.

As shown in Table II.4-13, of the 4,863,000 acres of BLM LUPA conservation designations on BLM-administered lands, 2,789,000 acres (57%) would be designated as Existing or Proposed ACEC, 1,398,000 acres (29%) would be Existing or Proposed ACEC or Wildlife Allocation and National Conservation Lands, 92,000 acres (2%) would be National Conservation Lands only, and 585,000 acres (12%) would be Wildlife Allocation.

Table II.4-12
Interagency Alternative 1 Within the BLM LUPA

Alternative Components	Acreage[1]
DFAs	**81,000**
Study Area Lands	**35,000**
DRECP Variance Lands	35,000
DRECP Plan-Wide Reserve Design Envelope	**8,127,000**

Table II.4-12
Interagency Alternative 1 Within the BLM LUPA

Alternative Components	Acreage[1]
Existing conservation areas	3,264,000
BLM LUPA conservation designations	4,863,000
Urban Areas, Other Lands, and Undesignated Areas	**1,590,000**
Impervious and Urban Built-up Land	71,000
BLM Open OHV Areas	235,000
Imperial Sand Dunes, including the BLM Open OHV Area	127,000
Johnson Valley OHV Shared Use Area	54,000
Undesignated Areas	1,103,000
Total	**9,834,000**

Notes: BLM LUPA conservation designations include NLCS lands, ACECs, and Wildlife Allocations. Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA would also designate approximately 2,537,000 acres of SRMAs on BLM-administered lands in addition to the 193,000 acres of existing SRMAs on BLM-administered lands, which are BLM designation overlays that overlap portions of the components provided in this table. Impervious and urban built-up lands occur within BLM LUPA conservation designations and DFAs where not explicitly included in the urban category reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[1] Acreages reported are on BLM-administered lands only within the BLM LUPA area.

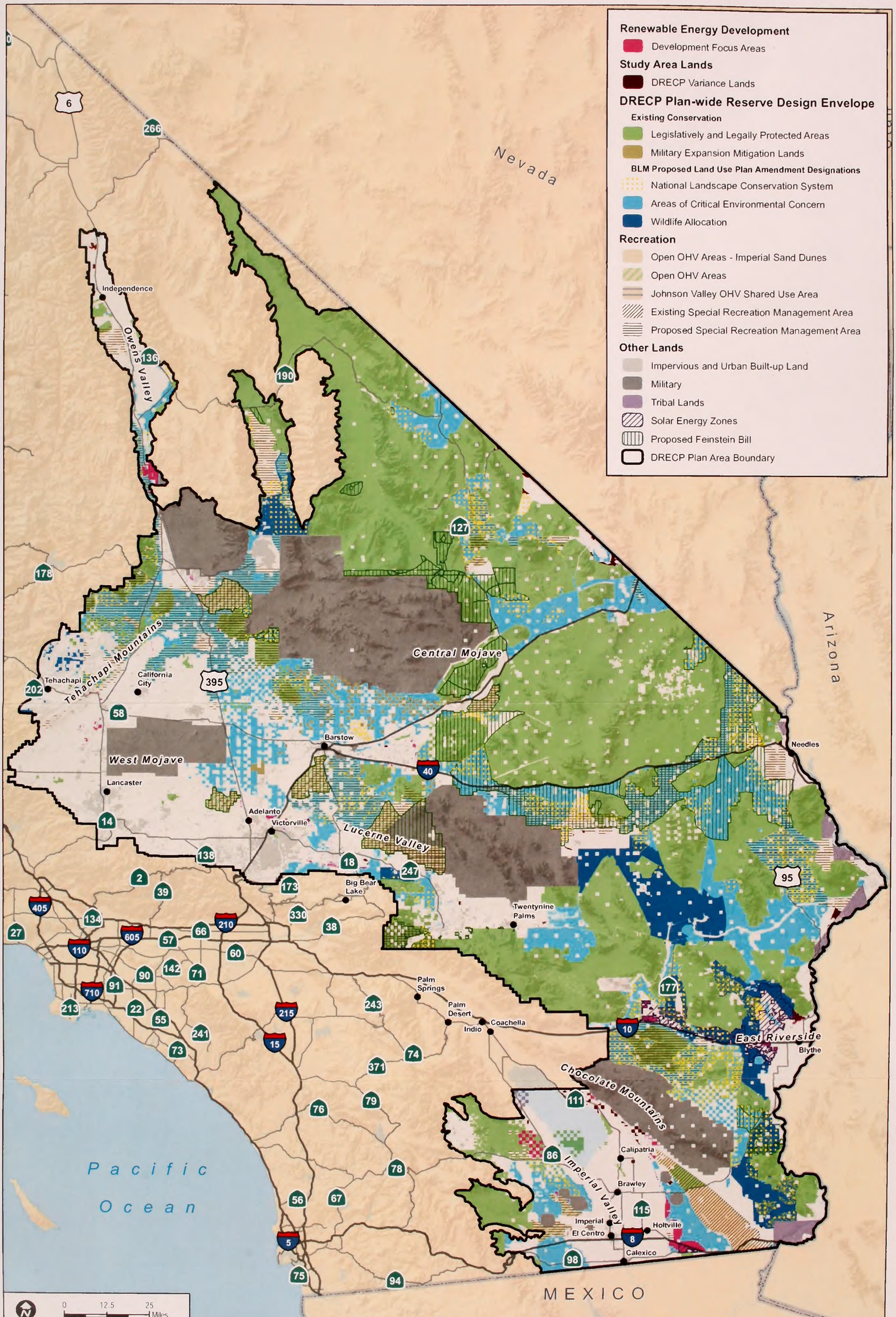
Table II.4-13
Alternative 1 BLM LUPA Conservation Designations Within the BLM LUPA

BLM LUPA Conservation Designation	Acreage[1,2]
NLCS	92,000
NLCS (and Existing ACEC)	733,000
NLCS (and Proposed ACEC)	414,000
NLCS (and Wildlife Allocation)	251,000
Existing ACEC	1,593,000
Proposed ACEC	1,196,000
Wildlife Allocation	585,000
Total	**4,863,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[1] Acreages reported are on BLM-administered lands only within the BLM LUPA area.

[2] Approximately 817,000 acres of BLM LUPA conservation designations on BLM-administered lands occur within existing conservation areas. These overlapping acres are not reported in this table.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.4-4

Alternative 1 - BLM LUPA

INTENTIONALLY LEFT BLANK

In addition to the proposed BLM LUPA conservation designations, Alternative 1 includes proposed BLM LUPA SRMAs as shown in Table II.4-14. Unlike the Preferred Alternative, Alternative 1 would not designate any Extensive Recreation Management Areas (ERMA).

Table II.4-14
Alternative 1 Special Recreation Management Areas and Extensive Recreation Management Areas Within the BLM LUPA

SRMA/ERMA	Acreage[1]
Existing SRMA	193,000
Proposed SRMA	2,537,000
Proposed ERMA	—
Total	2,730,000

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[1] Acreages reported are on BLM-administered lands only within the BLM LUPA area.

The proposed BLM LUPA would not modify existing energy corridors, including "corridors of concern" defined in the Section 368 Energy Corridors settlement agreement described in Section I.2.1.7.7.

II.4.2.1 BLM Renewable Energy Policies

The BLM Renewable Energy Policies would be the same as in the Preferred Alternative.

II.4.2.2 BLM Conservation Areas

II.4.2.2.1 National Conservation Lands

This alternative emphasizes lands with high scenic quality and landscape intactness. National Conservation Lands would include only the most scenic and intact desert landscapes as determined through a BLM Visual Resources Inventory. The National Conservation Lands in this alternative would still connect existing National Conservation Lands, such as BLM wilderness and National Park units, but at a smaller scale than the other alternatives. The use allocations of this alternative allow for a variety of uses as long as they are compatible with protecting National Conservation Land values. This alternative excludes all existing transmission corridors from National Conservation Lands.

This alternative would designate 1,515,000 acres as components of the National Conservation Lands on BLM-administered lands, which includes 817,000 acres within

existing conservation areas (LLPAs and MEMLs) and 698,000 acres as part of the BLM LUPA conservation designations.

II.4.2.2.1.1 Management of National Conservation Lands

1. Planning Area Wide National Conservation Land Management Direction

Like the Preferred Alternative, the use allocations for the National Conservation Lands in the California Desert Conservation Area (CDCA) are the allowable uses that would apply to all National Conservation Lands within the CDCA. The use allocations for the Preferred Alternative are listed below. For resources where there are no specific use allocations for National Conservation Lands, Plan-wide rules would apply unless otherwise specified in the Special Unit Management Plans (Appendix L).

Comprehensive Trails and Travel Management. National Conservation Lands would be designated in accordance to the appropriate Trails and Travel Management Plan (TTMP)/RMP, and future travel management will put the emphasis of travel allowed on designated routes that provide for enjoyment of values, or necessary administrative access to conserve, protect, and restore area values.

- **Cultural Resources.** Any adverse effects to historic properties resulting from allowable uses will be addressed through the Section 106 process of the National Historic Preservation Act and the implementing regulations at 36 Code of Federal Regulations (CFR) Part 800.
- **Lands and Realty**
    - **Rights-of-Way**
        - **Sites Authorizations.** National Conservation Lands would be avoidance areas. Sites ROWs would require mitigation/ compensation resulting in a net benefit to the National Conservation Lands unit. Site authorizations that protect or enhance conservation values, such as those granted as compensatory mitigation for Covered Activities within DFAs or for habitat restoration, would be allowed.
        - **Renewable Energy Generation.** National Conservation Lands would be exclusion areas for renewable energy ROWs.
        - **Linear ROWs**
            - National Conservation Lands would be avoidance areas for all other linear ROWs unless the use is clearly compatible with the protection of National Conservation Lands values.

- **Land Tenure**
  - Exchange, purchase, or donation would be permitted to acquire non-BLM lands within the National Conservation Lands unit, but disposal of lands within National Conservation Land units would not be allowed.
  - National Conservation Lands inholdings would be a priority for acquisition from willing sellers. All inholdings would become part of the National Conservation Lands unit upon acquisition and be subject to associated management requirements.

- **Minerals**
  - **Locatable Minerals.** For the purposes of locatable minerals, National Conservation Lands would be treated as "controlled" or "limited" use areas in the CDCA, requiring a Plan of Operations for greater than casual use under 43 CFR 3809.11.
  - **Saleable Minerals.** National Conservation Lands would be available for saleable mineral development, and would require mitigation/ compensation that results in net benefit for National Conservation Lands values.
  - **Leasable Minerals**
    - National Conservation Lands would be available for geothermal leasing with a No Surface Occupancy stipulation.
    - National Conservation Lands would be unsuitable for all other leasing.
- **Recreation and Visitor Services.** Competitive and Commercial Special Recreation Permits would be permitted.
- **Water Resources.** Apply for water rights on a case-by-case basis to protect water dependent National Conservation Lands values.
- **Disturbance Caps.**[2] Development in National Conservation Lands would be limited to 1% of total authorized disturbance.

2. National Conservation Land Subareas — Description of Values to be Protected

The values protected in the National Conservation Lands are described in Section II.4.2.2.1.2. This alternative emphasizes highly scenic and intact landscapes where they overlap with nationally significant ecological, cultural, or scientific values.

---

[2] Disturbance caps only apply to lands not already included under ACECs or Wildlife Allocation disturbance caps, as described in the Special Unit Management Plans in Appendix L.

3. Area-Specific National Conservation Land and Area of Critical Environmental Concern Management Prescriptions

Similar to the Preferred Alternative, there is overlap with the ACEC designations, and management for individual units is described in the Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L.

II.4.2.2.1.2 Subarea Descriptions

Basin and Range Subarea

Ecological Values

Ecological values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands in Alternative 1 include diverse vegetation alliances and intact ecosystems with habitat for many wildlife species, as described for the Preferred Alternative. They would include Inyo California towhee (*Pipilo crissalis eremophilus*) habitat in the Argus Range, and a small portion of two of the Mohave ground squirrel(*Xerospermophilus mohavensis*) population centers in Rose Valley (Coso_Olancha population) and North Searles Valley.
- National Conservation Lands in this alternative include connections for wildlife movement among habitat in designated BLM Wilderness Areas and in National Park units, and part of the Pacific migratory bird flyway. The areas of these wildlife corridors included would be less extensive than in the Preferred Alternative
- National Conservation Lands in this alternative do not include the dune and wetland communities of Panamint Lake or Panamint Valley, such as Warm Sulfur Springs, with its mesquite bosques and freshwater and saline marshes; greasewood sand dune habitat; the black toad (*Bufo exsul*) habitat in the Deep Springs area; Eureka and Saline Valleys; monarch overwintering sites; greater sage-grouse (*Centrocercus urophasianus*) habitat; the two watchable wildlife areas; or most of the Mohave ground squirrel population centers.

Cultural Values

Cultural values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- Like the Preferred Alternative, this alternative includes rich prehistoric and historic cultural sites, historic mining areas, and areas of traditional interest to Native Americans.

- Alternative 1 includes portions of the Last Chance Canyon National Register Archaeological District, Ayers Rock, the First Los Angeles Aqueduct, and the intact landscapes in the Coso Range, Haiwee Reservoir and Conglomerate Mesa areas as National Conservation Lands. These areas and the resources included would be less extensive than those described in the Preferred Alternative.
- National Conservation Lands in this alternative would not include the Fossil Falls Archaeological District; White Mountain City and other sites in Deep Springs, Fish Lake or Eureka Valleys; most of the Rose Spring National Register Archaeological District; most of the Eastern Sierra canyons or Sierra front; or the cultural values of Warm Sulfur Springs for Timbisha Shoshone traditional uses.

Scientific Values

Scientific values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- Ecological and cultural research opportunities would correspond with areas included as National Conservation Lands, as described above.
- The Trona Pinnacles would not be included as National Conservation Lands.

Acreage

Alternative 1 would include approximately 190,000 acres of National Conservation Lands in the Basin and Range subarea.

Coachella Valley

Ecological Values

Ecological values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include most of the ecological values described for the Preferred Alternative. These include Big Morongo Canyon with its riparian cottonwood–willow, marsh, and mesquite habitats, important to neotropical migrant birds; Whitewater Canyon at a convergence of ecoregions, with dense riparian vegetation and other habitats for endangered bird species and other wildlife; and the Coachella Valley Preserve with critical habitat for the threatened Coachella Valley fringe-toed lizard (*Uma inornata*) and the endangered Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*).
- National Conservation Lands in this alternative include additional noncontiguous patches of public lands in the Edom Hill–Willow Hole Preserve within the city limits

of Cathedral City. These add important biological resources such as mesquite hummocks, a fan palm oasis, Coachella Valley milk-vetch, Little San Bernardino Mountains gilia (*Linanthus maculatus*), Palm Springs round-tailed ground squirrel (*Spermophilus tereticaudus chlorus*), Palm Springs pocket mouse (*Perognathus longimembris bangsi*), burrowing owl (*Athene cunicularia*), and the Coachella giant sand treader cricket (*Macrobaenetes valgum*). The area is also home to the least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*), both federally listed as endangered, and other migratory birds such as yellow-breasted chat (*Icteria virens*) and yellow warbler (*Dendroica petechia*). Additional critical habitat for the Coachella Valley fringe-toed lizard is also included.

- National Conservation Lands in the transition zone between Mojave and Sonoran deserts, connecting the Mecca Hills and Orocopia Mountains Wilderness to the southern boundary of Joshua Tree National Park, would not be included.
- The Dos Palmas Preserve, with its riparian values, endangered desert pupfish (*Cyprinodon macularius*) and Yuma clapper rail (*Rallus longirostris yumanensis*), would not be included in National Conservation Lands.

Cultural Values

Cultural values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands in this alternative would encompass most of the cultural values described for the Preferred Alternative, including numerous significant prehistoric sites, sacred sites and landscape features of importance to Cahuilla culture, and historic structures and other features from early European American settlement.

The cultural resources of Dos Palmas Preserve, including ancient habitation sites on the shoreline of ancient Lake Cahuilla, are not included in National Conservation Lands under this alternative.

Scientific Values

Scientific values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values.

Acreage

This alternative would include approximately 44,000 acres of National Conservation Lands in the Coachella Valley subarea.

Colorado Desert

Ecological Values

Ecological values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the ecological values described for the Preferred Alternative. These include critical habitat for Agassiz's desert tortoise (*Gopherus agassizii*); foraging sites for golden eagles (*Aquila chrysaetos*); Sonoran Desert microphyll woodlands; and many other special status plants and animals and important plant communities.
- National Conservation Lands would be added north of Interstate 10. These lands encompass areas of habitat connectivity at the east end of Joshua Tree National Park, between the northeast and southeast parts of the park, important for desert tortoises and bighorn sheep; and dune habitat between Joshua Tree National Park and Palen McCoy Wilderness and at Palen Lake for Mojave fringe-toed lizard (*Uma scoparia*). The added lands also encompass additional populations of rare plant species dependent on dunes and sandy soils: Harwood's milk-vetch (*Astragalus insularis* var. *harwoodii*) and Palmer's jackass clover (*Wislizednia refracta* ssp. *palmeri*).
- Desert riparian zones with important bird habitat include Corn Springs and part of Milpitas Wash. Additional habitat at McCoy Wash is included in National Conservation Lands in this alternative.
- National Conservation Lands would be made up of large blocks of intact landscapes and encompass several wildlife corridor linkages. These areas would be less extensive overall than in the Preferred Alternative. National Conservation Lands would include the segments of the Chuckwalla to Chemehuevi tortoise linkage, Chuckwalla ACEC Extension, Chuckwalla Mountains Central, and Picacho areas that best meet the criteria for intact landscapes and nationally significant ecological values. National Conservation Lands in the northern part of the subarea encompass less extensive or no connectivity among the Old Woman Mountains, Cadiz Dunes, and Sheephole Valley wildernesses; and among Turtle Mountains, Big Maria Mountains, Rice Valley, and Riverside Mountains wildernesses. National Conservation Lands also do not link the Mule Mountains ACEC and Palo Verde Mountains Wilderness.
- Desert tortoise critical habitat included in National Conservation Lands in the Chuckwalla ACEC would be less extensive than in the Preferred Alternative.
- Vital underground habitat for sensitive bat species near the Colorado River is included in the southeast part of the subarea, and not in the northeast.

Cultural Values

Cultural values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands in this alternative would encompass most of the cultural values described for the Preferred Alternative, including many significant prehistoric sites and culturally significant landscapes and features; the Corn Springs site; and several World War II Desert Training Center camps.
- National Conservation Lands in this alternative would incorporate lesser areas of McCoy Valley and northern Palen Valley, and would add Ford Dry Lake, for these areas' high scenic values.
- National Conservation Lands would include a smaller segment of the historic Bradshaw Trail stage route, and a very small part of Indian Pass.
- Some sensitive cultural areas, including Alligator Rock, Mule Mountains, Camp Young and Iron Mountain, would not be encompassed by National Conservation Lands.

Scientific Values

Scientific values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values.

Acreage

This alternative would include approximately 462,000 acres in the Colorado Desert subarea.

Kingston–Amargosa

Ecological Values

Ecological values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the ecological values described for the Preferred Alternative. These include some crucial wildlife habitat linkages for desert tortoise and desert bighorn sheep (*Ovis canadensis nelson*); most of the Amargosa River's riparian communities and bird habitats; and the entire range of the Amargosa vole (*Microtus californicus scirpensis*).

- Corridors important for maintaining genetic connectivity for desert tortoise and desert bighorn sheep would be less extensive in the Shadow Valley and Silurian Valley areas.
- Populations of Amargosa nitrophila (*Nitrophila mohavensis*) along the northern segment of the Amargosa River would not be included in National Conservation Lands.

Cultural Values

Cultural values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands in this alternative would encompass some of the cultural values described for the Preferred Alternative, including nationally significant archaeological sites in the Shadow and Silurian valleys. About half of the Silurian Valley's archaeological sites would not be included as National Conservation Lands.
- Additional historic mining areas in the Silurian Valley would be included in National Conservation Lands in this alternative.

Scientific Values

Scientific values of National Conservation Lands in Alternative 1 relating to ecological and cultural values correspond with those values included under this alternative.

Acreage

This alternative would include approximately 200,000 acres of National Conservation Lands in the Kingston–Armargosa subarea.

Lake Cahuilla

Ecological Values

Ecological values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- As with the Preferred Alternative, National Conservation Lands would include the desert pupfish critical habitat of San Sebastian Marsh and Felipe Creek.
- Habitat for the flat-tailed horned lizard (*Phrynosoma mcallii*), Colorado Desert fringe-toed lizard (*Uma notata*), and bighorn sheep would be included as National Conservation Lands in portions of the West Mesa and Ocotillo areas. In other areas

these habitats would not be included. Lake Cahuilla shoreline lands would be much less extensive than in the Preferred Alternative.

- Mesquite Thickets and Munz's Cholla Unusual Plant Assemblages would be included in National Conservation Lands. Yuha Desert Crucifixion Thorn assemblage would not be included.
- National Conservation Lands in this alternative would encompass areas of habitat connectivity. These would be less extensive than in the Preferred Alternative. Conservation lands in this alternative would include the area around San Sebastian Marsh on the west and some of the lands around the Chocolate and Cargo Muchacho mountains east of the Imperial Sand Dunes. Not included as National Conservation Lands in this alternative would be the Yuha Basin, most of the Ocotillo and West Mesa areas, all of the East Mesa, and most other lands adjacent to the Algodones Dunes.

Cultural Values

Cultural values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include some of the prehistoric sites of San Sebastian Marsh.
- National Conservation Lands would not include archaeological sites or culturally significant features at Pilot Knob, Yuha Basin, Singer Geoglyphs, the historic Tumco mining area, most of the Ocotillo area, or any segments of the Juan Bautista de Anza National Historic Trail[3] or Southern Immigrant/Butterfield Stage route.

Scientific Values

Scientific values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 60,000 acres in the Lake Cahuilla subarea.

Mojave and Silurian Valley

This alternative emphasizes highly scenic and intact landscapes where they overlap with nationally significant ecological, cultural or scientific values.

---

[3] Although not included in the National Conservation Lands designated under Public Law 111-11, the Juan Bautista de Anza National Historic Trail remains a part of the NLCS as a National Historic Trail. Section II.4.2.2.2 discusses the National Historic Trail Management Corridor for this alternative.

Ecological Values

Ecological values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include areas of wildlife habitat connectivity. These areas would be less extensive and would not encompass habitat connectivity associated with the Silurian Valley, between Mojave National Preserve and Death Valley National Park, or between Rodman Mountains Wilderness and the Cady Mountains Wilderness Study Area (outside the subarea).
- National Conservation Lands would include less of Salt Creek Hills and about half of the Mojave River at Afton Canyon, with associated ecological values.
- National Conservation Lands would not encompass ecological values associated with Coolgardie Mesa; the critical habitat for desert tortoise and other special-status plant and animal habitats of the Superior–Cronese ACEC; the Ord-Rodman area with its rare Mojave monkeyflower (*Mimulus mohavensis*); populations of Parish's phacelia (*Phacelia parishii*) in the vicinity of Coyote Lake; or Mojave fringe-toed lizard habitat.

Cultural Values

Cultural values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass cultural values at Christmas Canyon as described for the Preferred Alternative.
- A larger area associated with the Calico Early Man Site would be included.
- National Conservation Lands would encompass less land around Black Mountain Wilderness. Inscription Canyon is included; less of the Black Mountain Rock Art District is included.
- The Mojave Road in Afton Canyon would be included, although less of Afton Canyon would be included.
- In the Silurian Valley, part of the area associated with historic mining would be included. The rest of the Silurian Valley and the entire Silurian Valley Corridor are omitted, so that the Old Spanish National Historic Trail,[4] Tonopah and Tidewater Railroad, and Boulder Transmission Line are not included.

[4] Although not included in the National Conservation Lands designated under Public Law 111-11, the Old Spanish Historic Trail remains a part of the NLCS as a National Historic Trail. Section II.4.2.2.2 discusses the National Historic Trail Management Corridor for this alternative.

Scientific Values

Scientific values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- There would be reduced research opportunities associated with most ecological and cultural values on National Conservation Lands, corresponding with the changes noted above.
- Research opportunities on National Conservation Lands in the vicinity of the Calico Early Man Site would be increased.
- National Conservation Lands would not encompass the paleontological values associated with Rainbow Basin and the Manix area.

Acreage

This alternative would include approximately 91,000 acres in the Mojave and Silurian Valley subarea.

Pinto, Lucerne Valley, and Eastern Slopes

Ecological Values

Ecological values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- The existing Bendire's Thrasher ACEC is added to National Conservation Lands in this alternative, encompassing breeding habitat for a unique disjunct population of Bendire's thrasher (*Toxostoma bendirei*), a rare, BLM Sensitive bird species.
- National Conservation Lands would encompass habitat for sensitive animal and plant species and for raptors. These areas would be less extensive than in the Preferred Alternative. Specifically, they would include isolated patches of desert tortoise critical habitat, golden eagle and prairie falcon (*Falco mexicanus*) breeding and foraging habitat, and Mojave monkey flower habitat in the Ord Mountains area.
- National Conservation Lands encompassing areas of habitat connectivity would be included in this alternative. These areas would be less extensive; specifically, connectivity between the two units of the Bighorn Mountains Wilderness would be included, while the Bighorn Mountains–Pipes Canyon wildlife connectivity area would not be included.
- National Conservation Lands would include part of the Pipes Canyon Huge Joshua Trees Unusual Plant Assemblage, and would not include Juniper Flats (San Diego horned lizard [*Phrynosoma coronatum blainvillii*], gray vireo [*Vireo vicinior*]) or the Carbonate Endemic Plant area.

- The ecological values of the Pinto Mountains in the southeast of the subarea, with habitat for the Mojave fringe-toed lizard, desert tortoise and other sensitive species, would not be encompassed by National Conservation Lands.
- No Unusual Plant Assemblages would be included as National Conservation Lands.

Cultural Values

Cultural values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- A part of the newly proposed Pipes Canyon cultural ACEC would be included.
- Juniper Flats, with its important cultural values including rock shelters and village sites, would not be encompassed by National Conservation Lands.
- The important prehistoric and historic values of the Pinto Mountains, such as the Dale Mining District and the World War II Desert Training Center remnants, would not be included.

Scientific Values

Scientific values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would not include the Carbonate Endemic Plant Research Natural Area ACEC, with its unusual geologic, soil, and plant association and habitat for threatened and endangered species.
- Other differences correspond with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 81,000 acres of National Conservation Lands in the Pinto, Lucerne Valley, and Eastern Slopes subarea.

Piute Valley and Sacramento Mountains

Ecological Values

Ecological values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the ecological values described for the Preferred Alternative, including habitat for desert tortoise and other declining and sensitive animal and plant species.

- National Conservation Lands would include the following, with less extensive acreage: the values of Chemehuevi Valley, including Chemehuevi Wash and teddybear cholla (*Cylindropuntia bigelovii*) stands; Piute–Fenner and Chemehuevi ACECs; the values of the Sacramento Mountains, including bat colonies and teddybear cholla stands; rare plant populations.
- National Conservation Lands would include areas of habitat connectivity important to bighorn sheep between the Stepladder Mountains, Turtle Mountains, and Whipple Mountains Wildernesses. Connections between other designated Wilderness Areas would not be included.
- National Conservation Lands would not include Homer Wash and most other parts of Ward Valley.

Cultural Values

Cultural values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the cultural values described for the Preferred Alternative, including important prehistoric sites along the Colorado River and historic sites such as Camp Ibis.
- Segments of the Mojave Trail, Old Spanish National Trail, East Mojave Heritage Trail, and historic U.S. Route 66, and some World War II Desert Training Center sites, including part of Camp Ibis, would be included as National Conservation Lands. These would be less extensive than in the Preferred Alternative.
- Some prominent cultural resources in the vicinity of Needles would not be included.

Scientific Values

Scientific values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values.

Acreage

This alternative would include approximately 250,000 acres of National Conservation Lands in the Piute Valley and Sacramento Valley subarea.

South Mojave–Amboy

Ecological Values

Ecological values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass many of the ecological values described for the Preferred Alternative. It would include National Conservation Lands connecting the Kelso Dunes Wilderness with the Cady Mountains Wilderness Study Area north of the Pisgah Crater ACEC, lands west of the Trilobite Wilderness across the Bristol Mountains, and lands around the mountain ranges and wilderness of the Fenner Valley.
- National Conservation Lands would encompass areas of wildlife habitat connectivity. The areas included would be less extensive than in the Preferred Alternative. The lands linking the Kelso Dunes Wilderness and the Cady Mountains Wilderness Study Area have important habitat connectivity for desert tortoise and bighorn sheep. National Conservation Lands would not link other Wilderness Areas with each other, and would not completely link the Ord–Rodman ACEC with the Chemehuevi ACEC.
- Populations of rare plants would be included in National Conservation Lands. These areas would be less extensive for some plants, particularly white-margined beardtongue (*Penstemon albomarginatus*).
- Bonanza Spring would not be included in National Conservation Lands.

Cultural Values

Cultural values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the cultural values described for the Preferred Alternative.
- A smaller portion of historic U.S. Route 66 is included in National Conservation Lands, at the east end of the subarea. Also included with less area are the historic Atchinson, Topeka and Santa Fe railroad and the proposed Mojave Trails National Monument.
- National Conservation Lands would not include Bonanza Spring or remnants of the Tonopah and Tidewater railroad grade.

Scientific Values

Scientific values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- Most scientific values would compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.
- The scientific values associated with the Pisgah Crater – the NASA Mars analog site and unique invertebrate assemblage associated with the lava tubes – would not be included.

Acreage

This alternative would include approximately 239,000 acres of National Conservation Lands in the South Mojave–Amboy subarea.

Western Desert and Eastern Slope

Ecological Values

Ecological values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include ecological values described for the Preferred Alternative except as stated below.
- National Conservation Lands include areas of wildlife habitat connectivity. These areas are less extensive than in the Preferred Alternative. The Kiavah Wilderness is linked by National Conservation Lands with the Bright Star Wilderness, and not with the El Paso Mountains Wilderness.
- National Conservation Lands would include the following, with less extensive areas as compared to the Preferred Alternative: stopover sites and habitat connectivity for the Pacific migratory bird flyway along the eastern flank of the Sierra; nesting habitat for Bendire's thrasher; burrowing owl habitat; Townsend's big-eared bat (*Corynorhinus townsendii*) habitat; and Charlotte's phacelia (*Phacelia nashiana*) range.
- National Conservation Lands would include less extensive foraging area for golden eagles between the Sierra Nevada front and the El Paso Mountains Wilderness, with a smaller portion of eagle habitat in Kelso Valley and the Sierras. Most golden eagle nesting sites and California condor (*Gymnogyps californianus*) habitat would not be included.
- National Conservation Lands would not include the following: the Desert Tortoise Research Natural Area and the Western Rand Mountains ACEC, which constitute

part of the Fremont–Kramer unit of Desert Tortoise Critical Habitat; the Unusual Plant Assemblage of Joshua trees (*Yucca brevifolia*) and Jeffrey pines (*Pinus jeffreyi*); habitat for the Tehachapi slender salamander (*Batrachoseps stebbinsi*) and Palmer's mariposa lily (*Calochortus palmeri*); Mohave ground squirrel population centers and expansion habitat; the Important Bird Area of Butterbredt Canyon; and the migratory and breeding bird habitat of Piute Mountains springs.

Cultural Values

Cultural values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include most of the cultural values described for the Preferred Alternative.
- National Conservation Lands would include the following, with less extensive areas as compared to the Preferred Alternative: the Last Chance Canyon National Register Archaeological District; areas on the southwest side of Black Mountain National Register Rock Art District; and intact landscapes in the Jawbone–Butterbredt area. Fewer Native American resources previously identified within the Jawbone–Butterbredt area would be included.
- Cultural resources eligible for listing, nominated for listing, or listed on the National Register of Historic Places would be included in this alternative; however, large areas where cultural landscapes have been identified through cultural resource inventory or tribal consultation would not be included.

Scientific Values

Scientific values of National Conservation Lands in Alternative 1 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values. The Desert Tortoise Research Natural Area is not included.

Acreage

This alternative would include approximately 49,000 acres of National Conservation Lands in the Western Desert and Eastern Slope subarea.

II.4.2.2.2 National Trails

II.4.2.2.2.1 National Scenic and Historic Trails

Goals and Objectives

Goals and objectives for National Scenic and Historic Trails (NSHT) would be the same as the Preferred Alternative.

Conservation and Management Actions for the Pacific Crest National Scenic Trail, and the Juan Bautista de Anza and Old Spanish National Historic Trails Management Corridors

- **Management Corridor Width (see also maps).** Establish a National Trail Management Corridor, width generally 0.25 mile from centerline.
- **Management of Trail Corridors.** Manage National Trails as components of the BLM's NLCS. Where National Trails overlap other National Conservation Lands, the more protective CMAs or land use allocations will apply. Within these areas, the BLM will support the nature and purposes of the designated National Trails.
- **Lands and Realty**
  - Rights-of-Way
    - **Site Authorizations**. NSHT Management Corridors would be avoidance areas. Sites ROWs would require mitigation/compensation resulting in net benefit to the NSHT.
    - **Linear ROWs.** NSHT Management Corridors would be avoidance areas. Exclude cultural landscapes, high potential historic sites, and high potential route segments identified along historic trails corridors from transmission. Where development affects trail management corridors, an analysis must be performed to ensure that it does not substantially interfere with the nature and purposes of the trail, and that mitigation/compensation results in a net benefit to the trail.
    - **Renewable Energy ROWs.** Exclude cultural landscapes, high potential historic sites, and high potential route segments identified along historic trails corridors from transmission except in approved DFAs. Where development affects trail management corridors, an analysis must be performed to ensure that it does not substantially interfere with the nature and purposes of the trail, and that mitigation/compensation results in a net benefit to the trail.

- **Land Tenure.** Exchange or disposal must result in net benefit to trail values through acquisition or other compensation.

- Minerals
  - **Locatable Minerals.** Locatable Minerals would be treated the same as limited or controlled use areas and a plan of operations will be required for greater than casual use as identified in 43 CFR 3809.11.
  - **Saleable Minerals.** NSHT Management Corridors would be unavailable for saleable mineral development.
  - **Leasable Minerals.** NSHT Management Corridors would be available for leasing with a no surface occupancy stipulation. Surface coal mining would not be allowed within the NSHT Management Corridors.
- **Recreation.** Competitive and Commercial Special Recreation Permits would be permitted if they do not substantially interfere with nature and purposes of NSHTs.
- **Cultural Resources.** Any adverse effects to historic properties resulting from allowable uses will be addressed through the Section 106 process of the National Historic Preservation Act and the implementing regulations at 36 CFR Part 800.
- **Visual Resources Management.** All NSHT Management Corridors will be designated as Visual Resource Management (VRM) Class II, except within approved transmission corridors (VRM Class III) and DFAs (VRM Class IV). However, state-of-the-art VRM best management practices for renewable energy will be employed commensurate with the protection of nationally significant scenic resources, cultural landscapes, and other identified resources, qualities, values, and associated settings and the primary use or uses to minimize the level of intrusion and protect trail settings.
- **Mitigation Requirements**
  - If a segment of an NSHT or trail under study for possible designation traverses a DFA, it will be subject to mitigation for impacts to trail resources, qualities, values, and associated settings, and primary use or uses, including, but not limited to, and not in priority order: avoidance, the cost of trail relocation, on-site mitigation, and off-site mitigation. Compensation can include acquisition or restoration of corridor features and landscapes at a minimum of 2:1, and must result in a net benefit to the overall National Trail Management Corridor. Covered Activity development within high potential route segments must not substantially interfere with the nature and purposes of the National Trail.

II.4.2.2.2.2 National Recreation Trails

Management for National Recreation Trails would be the same as under the Preferred Alternative.

II.4.2.2.3 Areas of Critical Environmental Concern

Alternative 1 would include 121 ACECs, totaling approximately 4,749,000 acres (nonoverlapping ACEC acres) on BLM-administered lands (includes ACECs within Existing Protected Areas). Specific management and maps for ACECs under this alternative are included in the Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L.

II.4.2.2.4 Wildlife Allocations

This alternative would include 836,000 acres of Wildlife Allocations on BLM-administered lands (includes Wildlife Allocations within NLCS). Descriptions and maps are included in the Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L.

II.4.2.2.5 Special Recreation Management Areas

This alternative would include 28 SRMAs (2,730,000 acres on BLM-administered lands). Descriptions, maps, and management actions for each SRMA under this alternative are included in SRMA Management Plans in Appendix L.

II.4.2.2.6 Lands Managed to Protect Wilderness Characteristics

Under this alternative, no lands would be managed to protect wilderness characteristics.

II.4.2.3 BLM-Specific CMAs

The following CMAs are different than the Preferred Alternative. For all other resources, see the Preferred Alternative, Section II.3.2.3.

II.4.2.3.1 Lands and Realty

Conservation and Management Actions for Lands and Realty would be the same as in the Preferred Alternative, except for Land Exchanges and Land Sales, as described below.

II.4.2.3.1.1 CMAs for the Entire Planning Area

- In nondesignated lands (i.e., lands not covered by the specific CMAs), make lands available for disposal through exchange or land sale.

II.4.2.3.1.2 CMAs in Development Focus Areas and DRECP Study Areas

- Make lands within DFAs available for disposal by sale or exchange under Section 203(a)(1), 203(a)(3), 206 and 209 of the Federal Land Policy and Management Act.
- In DRECP Study Areas, make lands unavailable for sale or exchange.

II.4.2.3.1.3 CMAs in National Conservation Lands

- Make lands within National Conservation Lands available for exchange in accordance with the CMAs outlined for National Conservation Lands in Section II.3.2.2.1.1.
- Make lands within National Conservation Lands unavailable for disposal.

II.4.2.3.1.4 CMAs in Areas of Critical Environmental Concern

- Acquire lands in ACECs through exchange, purchase, or donation.
- Make lands in ACECs unavailable for disposal.

Conservation and Management Actions in Wildlife Allocations

- Acquire lands in Wildlife Allocations through exchange, purchase, or donation.
- Make lands in Wildlife Allocations unavailable for disposal.

Conservation and Management Actions in Special Recreation Management Areas

- Acquire lands in SRMAs through exchange, purchase, or donation.
- Make lands in SRMAs unavailable for disposal.

II.4.2.3.2 Soil, Water, and Water-Dependent Resources

CMAs for soil, water, and water-dependent Resources would be the same as in the Preferred Alternative, except within DFAs, as described below.

II.4.2.3.2.1 CMAs in Development Focus Areas

- Limit disturbance of sensitive soil areas, so that no more than 1% of the sensitive soil areas within a proposed project footprint shall be disturbed for construction.
- Exclude renewable energy development that disturbs sand dunes.
- Limit disturbance of sand flow corridors, so that no more than 1% of the sand flow corridors within a proposed project footprint shall be disturbed for construction.

- Limit disturbance of desert pavement, so that no more than 5% of the desert pavement within a proposed project footprint shall be disturbed for construction.
- Avoid development in flood plain, unless such development can be mitigated.
- Apply a 0.25-mile protective offset around playas.

II.4.2.3.3 Visual Resources Management

Figure II.4-5 shows VRM Classes under this alternative. CMAs under this alternative would be the same as under the Preferred Alternative.

II.4.2.3.4 Wilderness Characteristics

No lands would be managed to protect wilderness characteristics under this alternative.

II.4.2.4 California Desert Conservation Area Plan Amendments

II.4.2.4.1 Multiple-Use Classes

The amendments to the multiple-use classes would be the same as the Preferred Alternative.

II.4.2.4.2 Visual Resource Management Classes and National Conservation Lands Outside of the DRECP

VRM Classes and National Conservation Land designations in the CDCA outside of the Planning Area are described in Section II.4.2.2.1 and Section II.4.2.3.3.

II.4.3 NCCP Elements of Alternative 1

The following provides an overview of the NCCP elements of Alternative 1. At the broadest level, the NCCP includes elements related to Covered Activities and conservation elements.

As described for the Preferred Alternative, each of the NCCP alternatives includes the full range of Covered Activities anticipated under the DRECP for each of the interagency Plan-wide alternatives. The Plan-wide description of Covered Activities serves as the description of Covered Activities for the NCCP alternatives.

The Natural Community Conservation Planning Act requires that NCCPs provide for the conservation and management of Covered Species and natural communities on a landscape or ecosystem level through the creation and long-term management of habitat reserves and the application of other equivalent conservation measures. To reflect the conservation that would occur under the NCCP, the NCCP elements of each alternative define the following means of providing conservation within the DRECP Plan-Wide Reserve Design Envelope: an NCCP Conceptual Plan-Wide Reserve Design, a DRECP NCCP Reserve Design, and other conservation actions.

Reserve design features and other conservation actions within the NCCP alternatives are consistent with and nested within the DRECP Plan-Wide Reserve Design Envelope in the interagency Plan-wide alternatives, but differ in terms of how reserve design features are grouped with in the NCCP Conceptual Plan-Wide Reserve Design and the DRECP NCCP Reserve Design. Table II.4-15 summarizes the NCCP elements of Alternative 1. As shown in Table II.4-15, the DRECP NCCP Reserve Design covers approximately 279,000 acres of BLM and non-BLM lands. Figure II.4-6 depicts the NCCP for Alternative 1. Refer to Appendix N for a description of how the Plan-wide description of the alternative serves as the description of the NCCP for the DRECP.

Table II.4-15
NCCP for Alternative 1

NCCP Components	Acreage
DFAs	**1,070,000**
Study Area Lands	**37,000**
DRECP Variance Lands	37,000
DRECP Plan-Wide Reserve Design Envelope	**15,039,000**
Existing conservation areas	7,662,000
NCCP Conceptual Plan-Wide Reserve Design	1,732,000
Inside the DRECP NCCP Reserve Design	279,000
BLM LUPA conservation designations	186,000
Biological Conservation Priority Areas on non-BLM lands	93,000
Outside the DRECP NCCP Reserve Design	1,454,000
BLM LUPA conservation designations	940,000
Biological Conservation Priority Areas on non-BLM lands	514,000
BLM LUPA conservation designations outside the NCCP Conceptual Plan-Wide Reserve Design	3,743,000
Biological Conservation Planning Areas on non-BLM lands	1,901,000
Urban Areas, Other Lands, and Undesignated Areas	**6,439,000**
Plan Area Total	**22,585,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.4.4 GCP Elements of Alternative 1

As described in Section II.3.4 for the Preferred Alternative, the DRECP's GCP elements include a streamlined permitting process for renewable energy development by nonfederal project proponents in the Plan Area. This section is intended to provide the description of the GCP elements of the DRECP for Alternative 1.

II.4.4.1 Overview of the Nonfederal GCP Lands of Alternative 1

The GCP component of Alternative 1 includes all nonfederal lands within the DRECP DFAs and Conservation Planning Areas, as well as nonfederal inholdings within existing conservation areas and BLM-administered lands in the Plan Area; these lands comprise the GCP Permit Area in the Plan Area. The larger GCP Plan Area encompasses the GCP Permit Area as well as Conservation Priority Areas outside the GCP Permit Area where permittee non-acquisition mitigation measures may be implemented (i.e., BLM-administered lands corresponding to the DRECP NCCP Reserve Design). Nonfederal lands include privately owned lands and lands owned by state and local jurisdictions. The conservation strategy and Covered Activities under the GCP would be consistent with the DRECP. Table II.4-16 provides a summary of Alternative 1 within the GCP component of the DRECP; Figure II.4-7 depicts Alternative 1 within the GCP area.

As shown in Table II.4-16, the GCP portion of the Plan Area covers a total of 971,000 acres of DFAs on nonfederal lands (91% of the total DFAs in Alternative 1). The biological resources environmental setting/affected environment for the GCP portion of the Plan Area is described in Volume III, Section III.7.11. The impact analysis for Alternative 1 on nonfederal lands within the GCP area is provided in Volume IV, Section IV.7.3.3.4

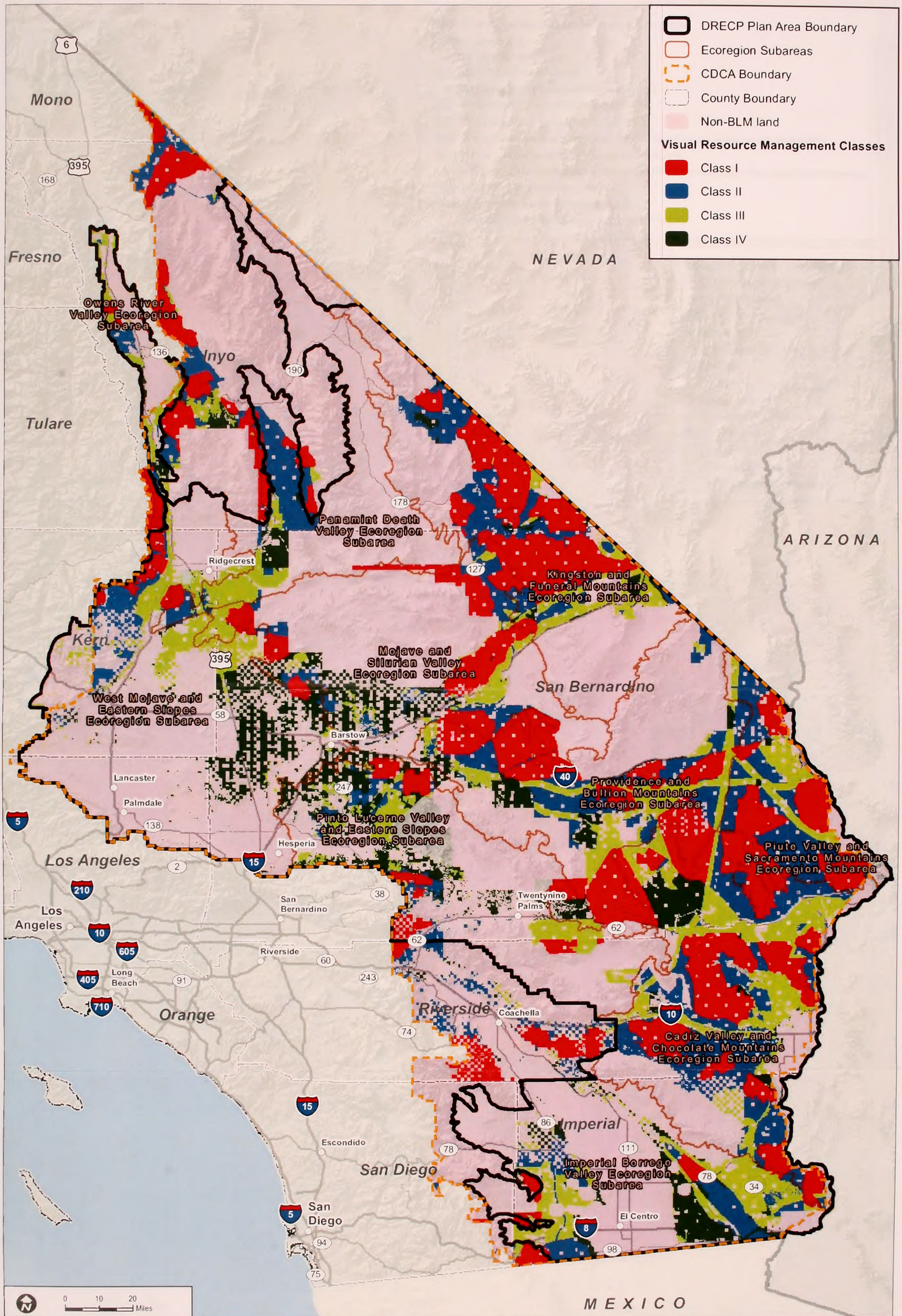
Table II.4-16
Alternative 1 Within the GCP

Alternative Components	Acreage[1]
DFAs (Nonfederal Lands Only)	**971,000**
DRECP Plan-Wide Reserve Design Envelope (Nonfederal Lands Only)	**2,868,000**
Existing conservation areas	433,000
BLM LUPA conservation designations	1,211,000
Conservation Planning Areas	1,223,000

Notes: Urban Areas, Other Lands, and Undesignated Areas also occur on nonfederal lands but are not reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.4.4.2 Overview of the GCP Permitting Process

The GCP permitting process under Alternative 1 would be the same as is described for the Preferred Alternative in Section II.3.4.2 and in Appendix M.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.4-5

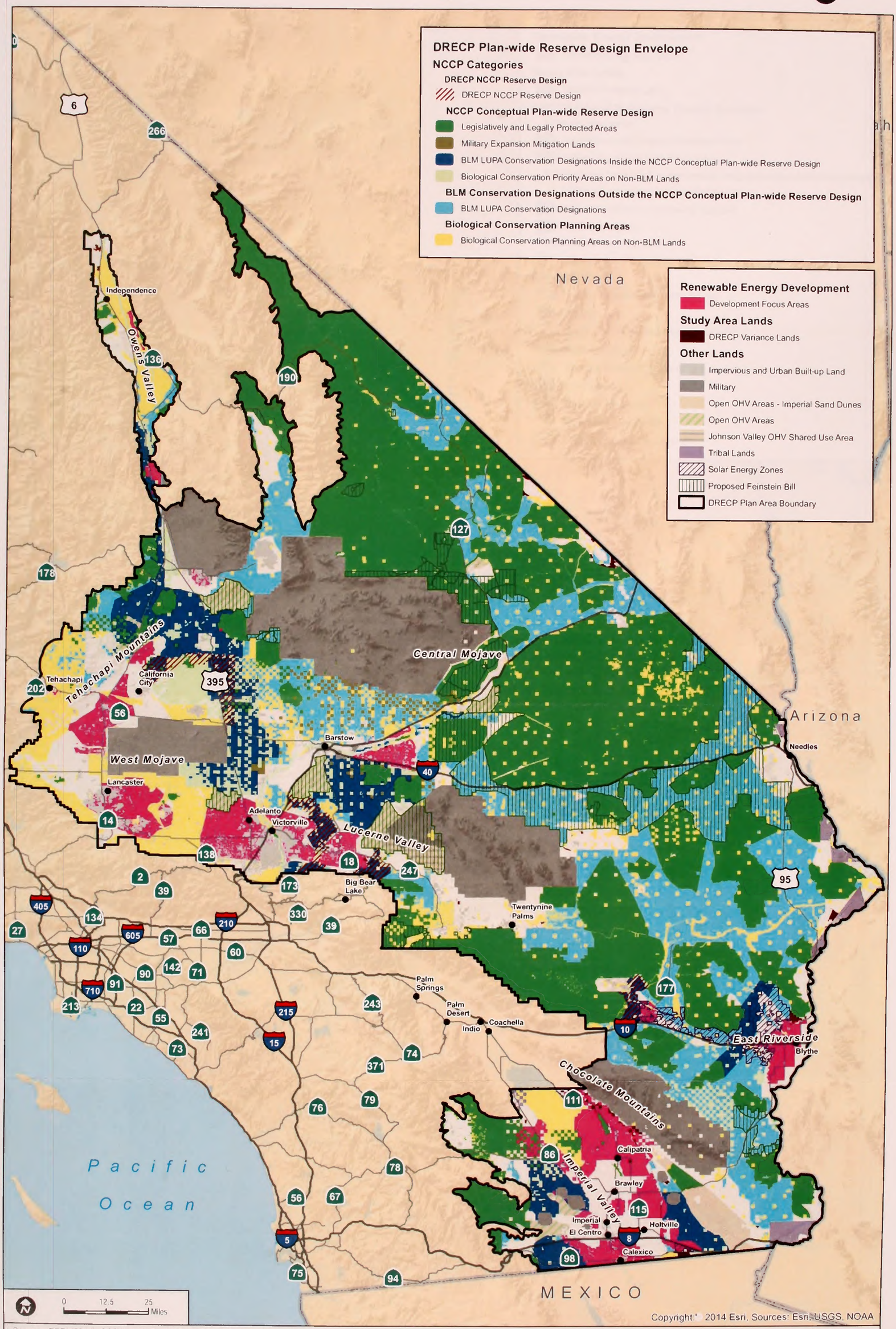
Alternative 1 - BLM Visual Resource Management Classes

Draft DRECP and EIR/EIS

August 2014

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_II\figII.4-5.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

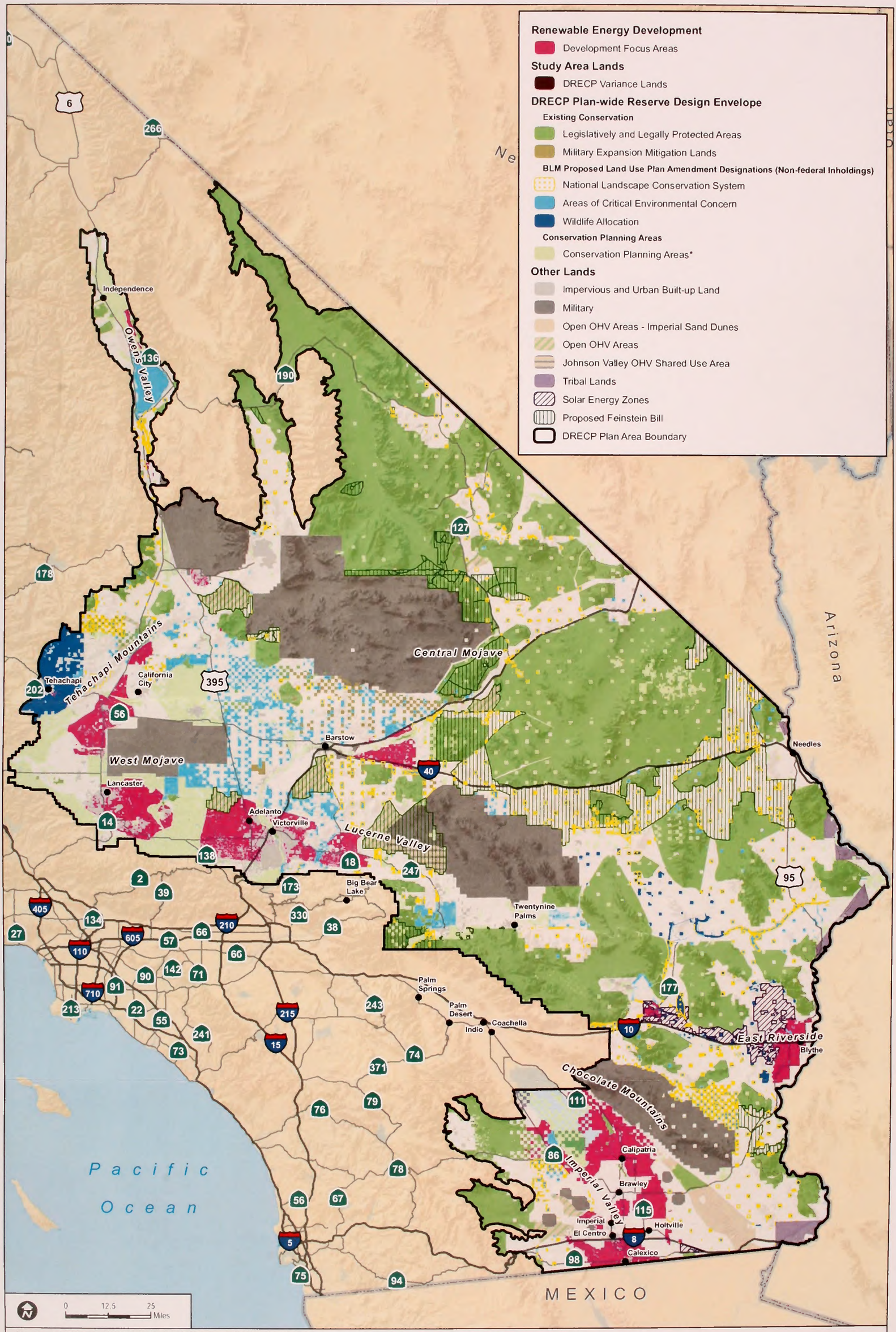


Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.4-6

Alternative 1 - Natural Community Conservation Plan

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.4-7

Alternative 1 - General Conservation Plan

INTENTIONALLY LEFT BLANK

II.5 ALTERNATIVE 2

Alternative 2 is one of five action alternatives considered and analyzed in the Desert Renewable Energy Conservation Plan (DRECP or Plan) and Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The description of Alternative 2 is first provided at an interagency level (Section II.5.1), which describes all Plan elements of the alternative. After the interagency description, the individual elements of the alternative are described, including the Bureau of Land Management (BLM) Land Use Plan Amendment (LUPA) elements of the DRECP (Section II.5.2), the Natural Community Conservation Plan (NCCP) elements of the DRECP (Section II.5.3), and the General Conservation Plan (GCP) elements of the DRECP (Section II.5.4).

II.5.1 Interagency Description of Alternative 2

The interagency description of Alternative 2 includes the following main sections: Overview of Alternative 2, Conservation Strategy, Monitoring and Adaptive Management Program, Description of the Covered Activities, and Plan Implementation. The description of Alternative 2 for the DRECP and EIR/EIS encompasses the overall conservation strategy and description of Covered Activities on federal and nonfederal lands (i.e., state, county, city, and privately owned lands) within the Plan Area.

II.5.1.1 Overview of Alternative 2

The following provides a Plan-wide overview of Alternative 2. Alternative 2 integrates the renewable energy and resource conservation with other existing uses in the Plan Area and includes BLM LUPA elements, NCCP elements, and GCP elements.

Under Alternative 2 for the DRECP, an interagency conservation strategy for the Plan Area would be established that includes a streamlined process for the permitting of renewable energy and transmission development on both federal and nonfederal lands and a BLM LUPA providing Conservation and Management Actions (CMAs) for resources throughout the Plan Area on BLM-administered lands. Like the Preferred Alternative, Alternative 2 would consist of Development Focus Areas (DFAs), Study Area Lands, and the DRECP Plan-Wide Reserve Design Envelope (including existing conservation areas, BLM LUPA conservation designations, and Conservation Planning Areas), Impervious and Urban Built-up Lands, Other Lands (including Military, Open Off-Highway Vehicle [OHV]) Areas, Tribal lands), and Undesignated Areas. These areas are defined in Section II.3.1, Interagency Description of the Preferred Alternative.

The BLM LUPA (Section II.5.2) provides the land use plan amendment description related to these components on BLM-administered lands, and it also describes the Special Recreation Management Areas (SRMAs) designations and other CMAs for resources on

BLM-administered lands. The NCCP (Section II.5.3) and GCP for nonfederal lands (Section II.5.4) describe how these Plan components would provide for incidental take authorization of Covered Species under Section 2835 of the state Natural Community Conservation Planning Act and Section 10 of the federal Endangered Species Act.

Alternatives under the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA), including Alternative 2, must consider potential impacts on all aspects of the human environment, both the natural environment and the built environment, including biological and nonbiological resources. Additionally, Appendix M contains all the required components of a GCP.

Figure II.5-1 provides the Plan-wide map for Alternative 2.

Table II.5-1 provides an overview summary for Alternative 2. In summary, Alternative 2 would include approximately 2,473,000 acres of DFAs. Study Area Lands include 109,000 acres of Future Assessment Areas. The DRECP Plan-Wide Reserve Design Envelope would include 7,662,000 acres of existing conservation areas, 6,242,000 acres of BLM LUPA conservation designations, and 1,183,000 acres of Conservation Planning Areas. Of the over 19 million acres of the Plan Area outside of Military Lands, BLM Open OHV Areas, and Tribal Lands, there are approximately 13,565,000 acres of federally owned or administered lands and 5,420,000 of nonfederal lands. The BLM LUPA elements of Alternative 2 are described in Section II.5.2; the NCCP elements of Alternative 2 are described in Section II.5.3; and the GCP elements of Alternative 2 addressing nonfederal lands are described in Section II.5.4. Exhibit II.5-1 graphically displays the components of Alternative 2.

Table II.5-1
Interagency DRECP Plan-Wide Alternative 2

Alternative Components	Acreage
DFAs	2,473,000
Study Area Lands	109,000
Future Assessment Areas	109,000
DRECP Plan-Wide Reserve Design Envelope	15,087,000
Existing conservation areas	7,662,000
BLM LUPA conservation designations	6,242,000
Conservation Planning Areas	1,183,000
Urban Areas, Other Lands, and Undesignated Areas	4,916,000
Impervious and Urban Built-up Land	505,000
Military Lands	3,019,000
Open OHV Areas	264,000
Imperial Sand Dunes, including the BLM Open OHV Area	132,000

Table II.5-1
Interagency DRECP Plan-Wide Alternative 2

Alternative Components	Acreage
Johnson Valley OHV Shared Use Area	56,000
Tribal Lands	129,000
Undesignated Areas	811,000
Total	**22,585,000**

Notes: This Plan-wide alternative summary includes both federal lands and nonfederal lands. The summary specific to BLM-administered lands is provided in Section II.5.2, and the summary specific to nonfederal lands is provided in Section II.5.4. Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. The BLM LUPA would also designate approximately 2,463,000 acres of Special Recreation Management Areas (SRMAs) in addition to the 193,000 acres of existing SRMAs, which are BLM designation overlays that overlap portions of the components provided in this table and described in Section II.5.2. Impervious and urban built-up lands occur within BLM LUPA conservation designations and DFAs were not explicitly included in the urban category reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

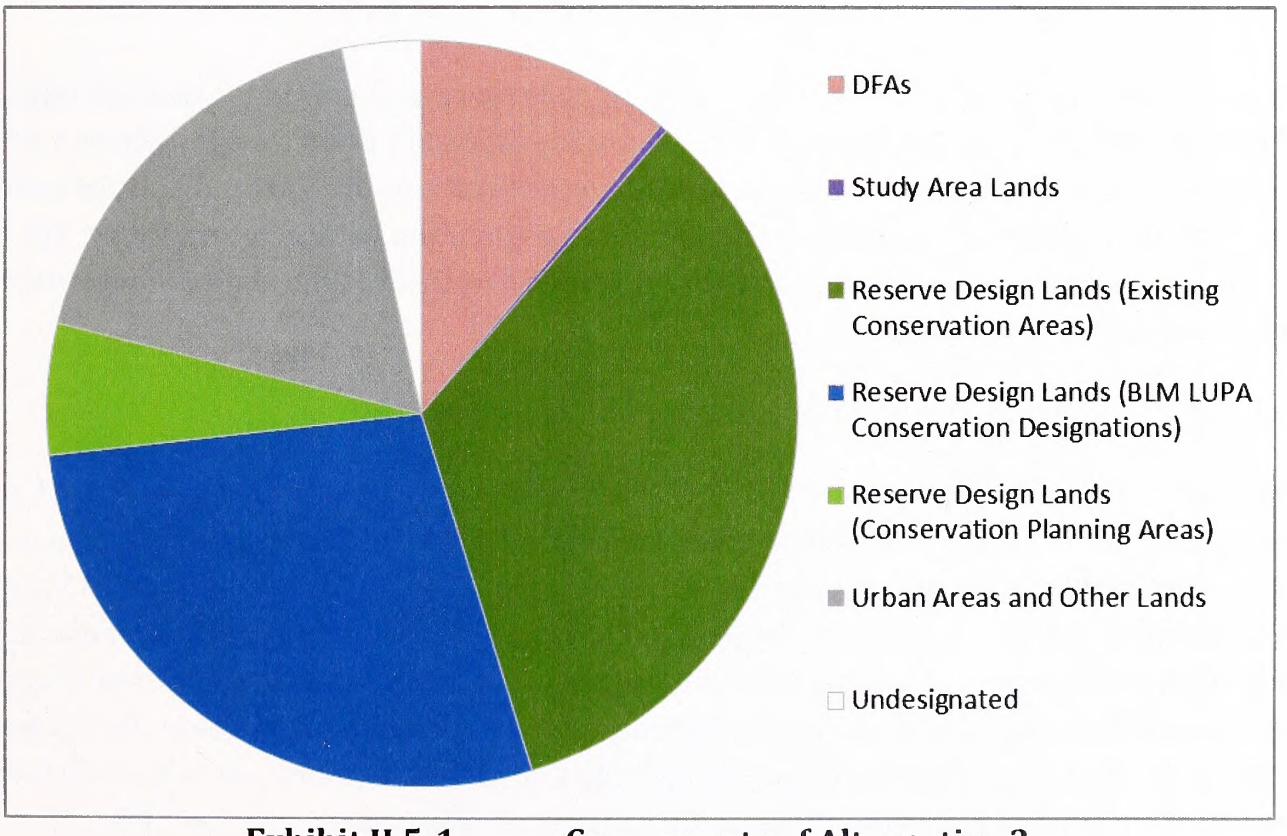


Exhibit II.5-1 Components of Alternative 2

II.5.1.2 Conservation Strategy

The Plan-wide conservation strategy for the DRECP was developed through the planning process described in Volume I, Chapter I.3. The process included: (1) establishing the

conservation focus on biological, cultural, recreation, and visual resources; (2) gathering baseline information; (3) identifying Biological Goals and Objectives (BGOs) and goals and objectives for nonbiological resources on BLM-administered land; (4) developing a comprehensive reserve design; (4) developing biological CMAs and CMAs for nonbiological resources on BLM land; and (6) developing a Monitoring and Adaptive Management Program. The approach and structure of the conservation strategy for Alternative 2 is the same as the conservation strategy for the Preferred Alternative.

II.5.1.2.1 Overview of the Structure and Content of the Biological Conservation Strategy for Alternative 2

The approach and structure of the conservation strategy under Alternative 2 is the same as that for the Preferred Alternative as described in Section II.3.1.2.

II.5.1.2.2 DRECP Proposed Covered Species List

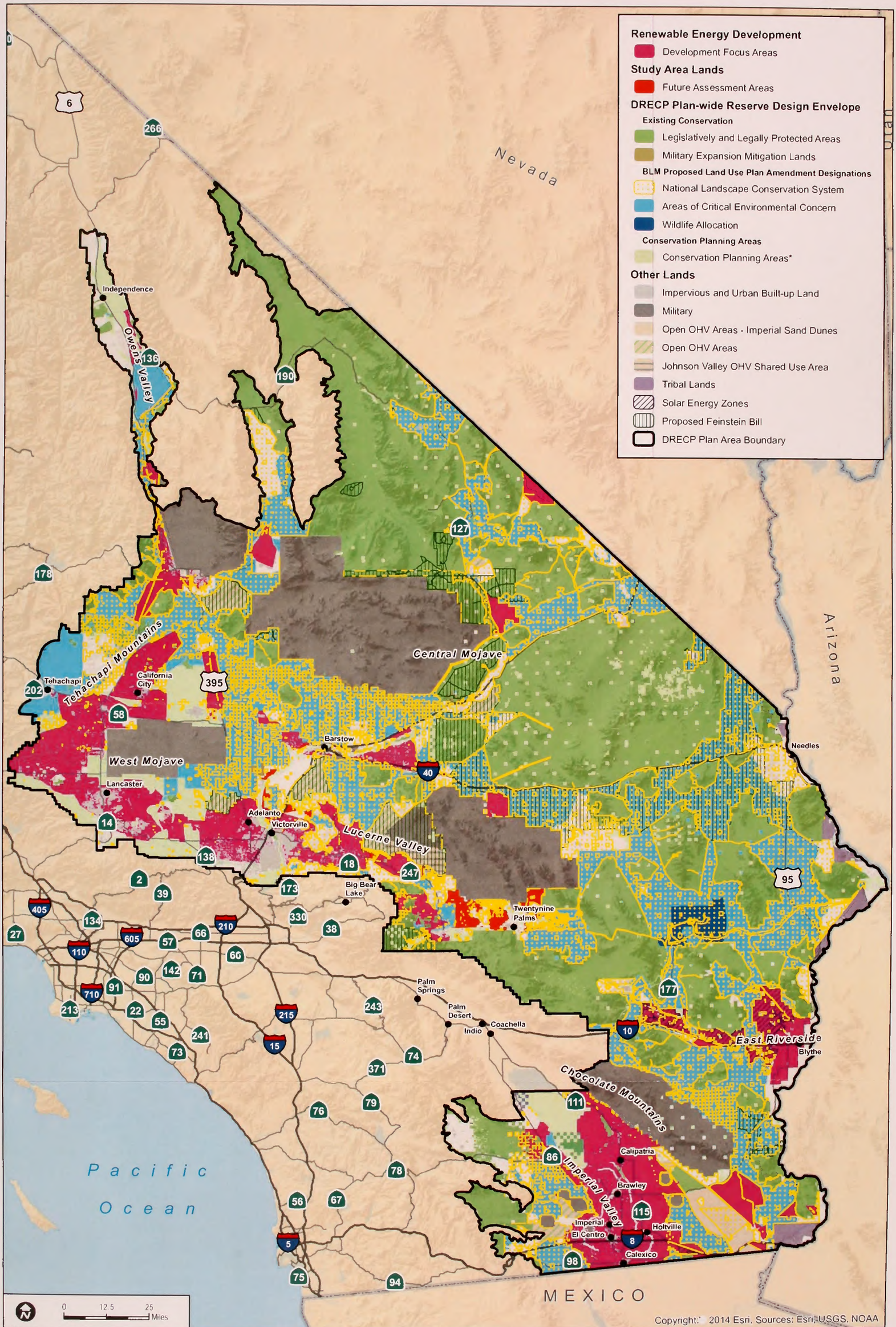
The proposed Covered Species list would be the same under Alternative 2 as it is under the Preferred Alternative. See Section II.3.1.2.2 for the proposed Covered Species list.

II.5.1.2.3 Plan-Wide Biological Goals and Objectives

The Plan-wide BGOs provide the broad guiding principles and define the desired outcome of the DRECP conservation strategy. The Plan-wide BGOs are described in Section I.3.4.3 and are provided in Appendix C at the landscape, natural community, and species levels. The Plan-wide BGOs are common to and apply to each of the DRECP alternatives. The Step-Down Biological Objectives describe the contribution of DRECP implementation towards achieving the Plan-wide BGOs.

II.5.1.2.4 DRECP Plan-Wide Reserve Design Envelope

The DRECP Plan-Wide Reserve Design Envelope for Alternative 2 was developed based on the biological reserve design process described in Section I.3.4.4. The reserve design is the mapped expression of Plan-wide BGOs. Additionally, an interagency Plan-Wide Conservation Priority Area has been identified. This area represents the highest priority area for the creation and long-term management of habitat reserves for the conservation of the 37 proposed Covered Species and representative examples of the natural communities and processes that support them in the Plan Area. The interagency Plan-Wide Conservation Priority Area was the basis for the NCCP Conceptual Plan-Wide Reserve Design of each alternative.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.5-1

Alternative 2

INTENTIONALLY LEFT BLANK

Overall, the DRECP Plan-Wide Reserve Design Envelope for Alternative 2 would cover 80% of the Plan Area (excluding Military Lands, Tribal Lands, and BLM Open OHV Areas), which includes 7,662,000 acres of existing conservation areas, 6,242,000 acres of BLM LUPA conservation designations, and 1,183,000 acres of Conservation Planning Areas. Approximately half of the DRECP Plan-Wide Reserve Design Envelope for Alternative 2 is made up of existing conservation areas (i.e., Legislatively and Legally Protected Areas [LLPAs] and Military Expansion Mitigation Lands [MEMLs]). Approximately 41% of the DRECP Plan-Wide Reserve Design Envelope for Alternative 2 is made up of existing and proposed BLM LUPA conservation designations including combinations of Areas of Critical Environmental Concern (ACECs), National Landscape Conservation System (NLCS), and Wildlife Allocations, and approximately 8% of the DRECP Plan-Wide Reserve Design Envelope for Alternative 2 is comprised of Conservation Planning Areas.

The interagency Plan-Wide Conservation Priority Area within the reserve design envelope covers approximately 2,734,000 acres. This includes 2,427,000 acres of BLM LUPA conservation designations (1,958,000 acres on BLM-administered lands and 470,000 acres of non-BLM inholdings) and 307,000 acres of Conservation Planning Areas.

The DRECP Plan-Wide Reserve Design Envelope for Alternative 2 is comprised of an interconnected network of federal and nonfederal (both public and private) lands that spans seven counties, multiple ownerships, and ten ecoregion subareas of the Mojave and Colorado/Sonoran deserts of California. Figure II.5-2 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 2, and Appendix G provides figures of the reserve design envelope for each ecoregion subarea in the Plan Area. Table II.5-2 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 2 by county. Table II.5-3 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 2 by ownership. Table II.5-4 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 2 by ecoregion subarea.

Table II.5-2
DRECP Plan-Wide Reserve Design Envelope for Alternative 2 by County

County	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Imperial County	274,000	705,000	137,000	1,117,000
Inyo County	1,921,000	595,000	139,000	2,654,000
Kern County	135,000	514,000	156,000	805,000
Los Angeles County	6,000	41,000	238,000	286,000
Riverside County	982,000	639,000	59,000	1,680,000
San Bernardino County	4,145,000	3,747,000	449,000	8,340,000

Table II.5-2
DRECP Plan-Wide Reserve Design Envelope for Alternative 2 by County

County	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
San Diego County	199,000	0	6,000	205,000
Total	**7,662,000**	**6,242,000**	**1,183,000**	**15,087,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. These include both existing and proposed conservation designations. The reserve design envelope also includes an interagency Plan-wide Conservation Priority Area that covered 2,734,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.5-3
DRECP Plan-Wide Reserve Design Envelope for Alternative 2 by Ownership Class

Ownership Class	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Federal Lands				
BLM-administered land	3,279,000	5,191,000	-	8,470,000
Other federal land	3,949,000	9,000	62,000	4,021,000
Nonfederal Lands				
Private land	31,000	830,000	838,000	1,68,000
State and local public land	403,000	212,000	283,000	897,000
Total	**7,662,000**	**6,242,000**	**1,183,000**	**15,087,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. These include both existing and proposed conservation designations. The reserve design envelope also includes an interagency Plan-wide Conservation Priority Area that covered 2,734,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.5-4
DRECP Plan-Wide Reserve Design Envelope for Alternative 2 by Ecoregion Subarea

Ecoregion Subarea	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Cadiz Valley and Chocolate Mountains	842,000	1,385,000	70,000	**2,297,000**
Imperial Borrego Valley	355,000	455,000	133,000	**943,000**
Kingston and Funeral Mountains	1,767,000	563,000	74,000	**2,403,000**
Mojave and Silurian Valley	786,000	569,000	57,000	**1,412,000**
Owens River Valley	32,000	143,000	98,000	**272,000**
Panamint Death Valley	1,253,000	308,000	19,000	**1,580,000**
Pinto Lucerne Valley and Eastern Slopes	739,000	462,000	97,000	**1,298,000**
Piute Valley and Sacramento Mountains	423,000	541,000	31,000	**995,000**
Providence and Bullion Mountains	1,305,000	825,000	136,000	**2,265,000**
West Mojave and Eastern Slopes	162,000	992,000	468,000	**1,623,000**
Total	**7,662,000**	**6,242,000**	**1,183,000**	**15,087,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. These include both existing and proposed conservation designations. The reserve design envelope also includes an interagency Plan-wide Conservation Priority Area that covered 2,734,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Existing Conservation

The Plan Area encompasses existing conservation areas that include LLPAs and MEMLs, which include among other designations Wilderness Areas, Wilderness Study Areas, National Parks, National Preserve, and California State Parks. LLPAs serve as the building blocks of the reserve design with existing boundaries and management regimes around which the BLM LUPA conservation designations and Conservation Planning Areas were designed. Existing conservation areas are the same for all alternatives. A full description of the existing conservation areas is provided in Section I.3.4.4 under the reserve design process. The existing conservation areas of the reserve design are shown on Figure II.5-2 and the ecoregion subarea maps of the reserve design in Appendix G.

BLM LUPA Conservation Designations

The BLM LUPA conservation designations are a critical component of the reserve design for the DRECP. These include existing and newly proposed NLCS designations, ACEC designations, and Wildlife Allocations. The land unit names included in BLM LUPA conservation designations in the reserve design by ecoregion subarea are provided in Section II.5.2 and Appendix L. The BLM LUPA conservation designations component of the reserve design is shown on Figure II.5-2 and the ecoregion subarea maps of the reserve design in Appendix G.

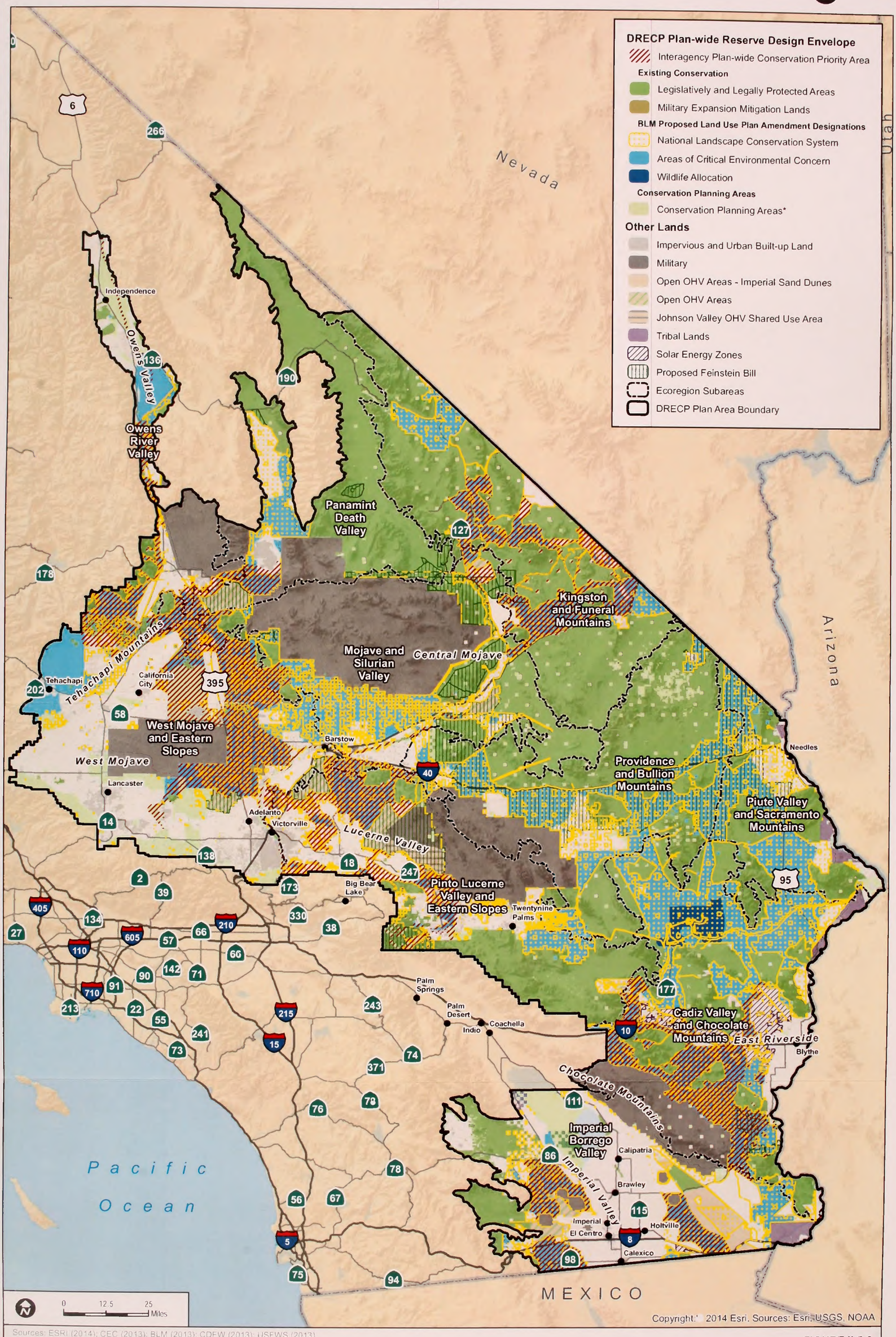
Conservation Planning Areas

Conservation Planning Areas are the portions of the reserve design located outside of existing conservation areas and BLM-administered lands. Conservation Planning Areas include both public and private lands. Reserve areas would be created within Conservation Planning Areas by acquiring land or conservation easements from willing sellers within the Conservation Planning Areas to provide compensatory mitigation for Covered Activities to contribute to meeting BGOs. Conservation Planning Areas within the interagency Plan-Wide Conservation Priority Area have been prioritized for conservation. The Conservation Planning Areas component of the reserve design is shown on Figure II.5-2 and the ecoregion subarea maps of the reserve design in Appendix G.

II.5.1.2.5 Biological CMAs

The biological CMAs under Alternative 2 would be the same as those for the Preferred Alternative described in Section II.3.1.2.5, except as described in the following discussion. The CMAs related to BLM LUPA conservation designations under Alternative 2 are described in Section II.5.2 and in the BLM unit-specific worksheets in Appendix L.

- **Exceptions to the Preferred Alternative CMAs.** The Plan-wide CMAs, landscape-level CMAs, Natural Communities and Covered Species CMAs in the DFAs, Natural Communities and Covered Species CMAs in the Reserve, and the Transmission-specific CMAs under the heading "Exceptions to the Preferred Alternative CMAs" will specify the CMA code (e.g., RIPWET-1) that corresponds to the specific CMA listed in the biological CMAs for the Preferred Alternative that will not be implemented for Alternative 2.
- **Additional CMAs to the Preferred Alternative.** The Plan-wide CMAs, landscape-level CMAs, Natural Communities and Covered Species CMAs in the DFAs, Natural Communities and Covered Species CMAs in the Reserve, and the Transmission-specific CMAs will list the additional biological CMAs under the heading "Additional CMAs to the Preferred Alternative" that will be implemented specifically for Alternative 2 in addition to the CMAs described for the Preferred Alternative.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.5-2

Alternative 2 - Plan-wide Reserve Design Envelope

INTENTIONALLY LEFT BLANK

The following provides the biological CMAs for Alternative 2, including the CMAs listed in the Preferred Alternative that will not be implemented and any additional CMAs that will specifically be implemented for Alternative 2 in addition to the biological CMAs in the Preferred Alternative.

II.5.1.2.5.1 Avoidance and Minimization CMAs

Alternative 2 would implement avoidance and minimization CMAs including the Avoidance and Minimization CMAs in the Preferred Alternative with the exceptions and additions as described in Section II.5.1.2.5.2 through Section II.5.1.2.5.6.

II.5.1.2.5.2 Plan-Wide Avoidance and Minimization CMAs

Under Alternative 2, the Plan-Wide Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.2) will be implemented with no exceptions or additions.

II.5.1.2.5.3 Landscape-Level Avoidance and Minimization CMAs

Under Alternative 2, the Landscape-Level Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.3) will be implemented with the following exceptions or additions.

Exception to **AM-LL-1** in the Preferred Alternative:

- **AM-LL-1 (Alternative 2).** Under Alternative 2, AM-LL-1 from the Preferred Alternative (maintenance and habitat linkage function) would not apply.

II.5.1.2.5.4 Natural Communities and Covered Species Avoidance and Minimization CMAs in DFAs

Under Alternative 2, the Natural Community and Covered Species Avoidance and Minimization CMAs in DFAs listed in the Preferred Alternative (Section II.3.1.2.5.4) will be implemented with the following exceptions or additions.

Riparian and Wetland Natural Communities and Covered Species

Common to Riparian and Wetland Natural Community CMAs

Exception to **AM-DFA-RIPWET-1** in the Preferred Alternative:

- **AM-DFA-RIPWET-1 (Alternative 2).** The riparian and wetland natural communities and other features listed in Table II.5-5 will be avoided to the maximum extent practicable (see "unavoidable impacts to resources" in the Glossary of Terms) with the specified setback in DFAs.

Table II.5-5
Riparian and Wetland Avoidance and Setbacks

Riparian and Wetland Natural Communities or Features	DFAs Setback[1]
Riparian Natural Communities[1]	
Madrean warm semi-desert wash woodland/scrub	200 feet
Mojavean semi-desert wash scrub	200 feet
Sonoran-Coloradan semi-desert wash woodland/scrub	200 feet
Southwestern North American riparian evergreen and deciduous woodland	0.25 mile
Southwestern North American riparian/wash scrub	0.25 mile
Wetland Natural Communities[1]	
Arid west freshwater emergent marsh	0.25 mile
Californian warm temperate marsh/seep	0.25 mile
Other Riparian and Wetland Related Features	
Managed wetlands[2]	1 mile
Mojave River[3]	0.25 mile
Agricultural drains[4]	25 feet
Undifferentiated riparian land cover[5]	200 feet

Notes:

1 Setbacks are measured from the edge of the mapped riparian or wetland vegetation or water feature per AM-PW-3.

2 Setback is from managed wetlands including U.S. Fish and Wildlife (USFWS) Refuges, state-managed wetlands, and duck clubs in Imperial Valley. See AM-DFA-RIPWET-1 for specifications related to the Salton Sea.

3 Setback is measured from the edge of mapped riparian or edge of Federal Emergency Management Agency (FEMA) 100-year floodplain of the Mojave River, whichever is further from the center line of the Mojave River channel.

4 Setback for agricultural drains is measured from the edge of the drain or the Palos Verdes Irrigation District and Imperial Irrigation District right-of-way (ROW).

5 Undifferentiated "Riparian" land cover includes portions of major river courses (Mojave River and Colorado River) within the main channels where riparian natural communities were not mapped.

- For unavoidable impacts (see "unavoidable impacts to resources" in the Glossary of Terms) to the riparian natural communities, wetland natural communities, or encroachments on the setbacks listed in Table II.3-6 (Chapter II.3), the following will be required:
  - Written concurrence from the DRECP Coordination Group will be required prior to commencing the unavoidable impacts. Approval from the DRECP Coordination Group will consider previously permitted impacts and conservation for these natural communities, siting and design considerations, and proposed compensation for the unavoidable impacts.
  - Compliance with all applicable laws and regulations pertaining to wetlands and waters would be required prior to commencing the unavoidable impacts.
  - Hydrological function of the avoided riparian or wetland natural communities will be maintained.

  - Unavoidable impacts to the riparian and wetland natural communities or other features including the setbacks listed in Table II.3-7 (Chapter II.3) will occur outside of the avian nesting season, which is from February 1 through August 31.

- The DRECP, and specifically the riparian and wetland natural communities setback for managed wetlands, is intended to be complimentary to the Salton Sea restoration planning effort. The Salton Sea DFA is limited to geothermal projects and surface occupancy from the current (2013) Salton Sea shoreline is the only impact allowed under DRECP. As the Salton Sea recedes, surface occupancy for any technology would need to be analyzed and the Plan would need to be amended if coverage is sought under DRECP.

Individual Covered Species (ICS)

Desert Bighorn Sheep (Ovis canadensis nelsoni)

Additional CMAs to the Preferred Alternative:

- **AM-DFA-ICS-43:** Prohibit rock climbing, during peak lambing and rearing season (March 1 through May 31), on BLM-administered lands, in locations of disturbance to occupied sheep core locations likely used for lambing and rearing, or in areas where disturbance is highly likely based on the level of recreation use, proximity to occupied core areas, line of sight, and topographic relief.

Desert Tortoise (Gopherus agassizii)

Exception to **AM-DFA-ICS-5** in the Preferred Alternative:

- **AM-DFA-ICS-5 (Alternative 2).** Under Alternative 2, CMA **AM-DFA-ICS-5** from the Preferred Alternative (avoidance of desert tortoise conservation areas [TCAs] and linkages) would not apply.

Exception to **AM-DFA-ICS-6** in the Preferred Alternative:

- **AM-DFA-ICS-6 (Alternative 2):** Under Alternative 2, CMA **AM-DFA-ICS-6** would be modified as follows:
  - Covered Activities within desert tortoise linkages identified in Appendix H, will require an evaluation of the effects on the maintenance of viable desert tortoise populations within the affected linkage. The analysis will consider the amount of suitable habitat required to ensure minimum functionality within each linkage given the linkage's population density, long-term demographic and genetic needs, degree of existing habitat disturbance, mortality sources, and most up-to-date population viability modeling.

II.5.1.2.5.5 Natural Communities and Covered Species Avoidance and Minimization CMAs in the Reserve

Under Alternative 2, the Natural Communities and Covered Species Avoidance and Minimization CMAs in the Reserve listed in the Preferred Alternative (Section II.3.1.2.5.5) will be implemented with no exceptions or additions.

II.5.1.2.5.6 Transmission Avoidance and Minimization CMAs

Under Alternative 2, the Transmission Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.6) will be implemented with no exceptions or additions.

II.5.1.2.5.7 Compensation CMAs

Under Alternative 2, the Compensation CMAs listed in the Preferred Alternative (Section II.3.1.2.5.7) will be implemented with the following exceptions or additions.

Exception to **COMP-1** in the Preferred Alternative:

- **COMP-1 (Alternative 2).** Impacts from Covered Activities in the DFAs will be compensated using the standard compensation ratio, except for the biological resources and specific geographic locations listed as compensation ratio exceptions that will use the compensation ratio exceptions summarized in Table II.5-6 and described in further detail in Appendix H. The compensation acreage requirement calculated by the standard compensation ratio and the compensation ratio exceptions can be fulfilled through land acquisition compensation approved by the DRECP Coordination Group, through implementation of non-acquisition actions approved by the DRECP Coordination Group, or a combination of these options. Compensation criteria for land acquisitions and non-acquisition actions will be determined through implementation on a project-specific basis as described by the DRECP Biological Conservation and Mitigation Program in Section II.3.1.5.3.

Table II.5-6
Compensation Ratios for the Impacts[1] of DRECP Covered Activities in the DFAs

Standard Compensation Ratio	Compensation Ratio Exceptions	
2:1	Desert tortoise (*Gopherus agassizii*)[1]: Any critical habitat unit or Desert Tortoise Research Natural Area	3:1
	Mohave ground squirrel (*Xerospermophilus mohavensis*)[1]: Key population centers and expansion areas	5:1
	Flat-tailed horned lizard (*Phrynosoma mcallii*)[1]: Flat-Tailed Horned Lizard Management Areas	RMS

Table II.5-6
Compensation Ratios for the Impacts[1] of DRECP Covered Activities in the DFAs

Standard Compensation Ratio	Compensation Ratio Exceptions	
	Wetlands[1]	1:1 (preserve) 1:1 (restore or enhance)
	Silurian Valley[1]	3:1
	Agriculture and disturbed lands[1]	1:1

[1] See Appendix H, Table H-4a, for full footnotes.
RMS = Flat-Tailed Horned Lizard Rangewide Management Strategy

Exception to **COMP-2** in the Preferred Alternative:

- **COMP-2 (Alternative 2).** Impacts from transmission Covered Activities in the DRECP Plan-Wide Reserve Design Envelope will be compensated using the standard compensation ratio, except for the biological resources and specific geographic locations listed as compensation ratio exceptions that will use the compensation ratio exceptions summarized in Table II.5-7 and described in further detail in Appendix H. The compensation acreage requirement calculated by the standard compensation ratio and the compensation ratio exceptions can be fulfilled through land acquisition compensation approved by the DRECP Coordination Group, through implementation of non-acquisition actions approved by the DRECP Coordination Group, or a combination of these options. Compensation criteria for land acquisitions and non-acquisition actions will be determined through implementation on a project-specific basis as described by the DRECP Biological Conservation and Mitigation Program in Section II.3.1.5.3.

Table II.5-7
Compensation Ratios for the Impacts of Transmission Covered Activities in the DRECP Plan-Wide Reserve Design Envelope

Standard Compensation Ratio[1]	Compensation Ratio Exceptions[1]	
2:1	Desert tortoise designated critical habitat and TCA linkages	5:1
	Mohave ground squirrel[1]: Key population centers and expansion areas	5:1
	Flat-tailed horned lizard[1]: Flat-Tailed Horned Lizard Management Areas	RMS
	Wetlands[1]	1:1 (preserve)

Table II.5-7
Compensation Ratios for the Impacts of Transmission Covered Activities in the DRECP Plan-Wide Reserve Design Envelope

Standard Compensation Ratio[1]	Compensation Ratio Exceptions[1]	
		1:1 (restore or enhance)
	Silurian Valley[1]	3:1
	Agriculture and disturbed lands[1]	1:1

[1] See Appendix H, Table H-4b, for full footnotes.
RMS = Flat-Tailed Horned Lizard Rangewide Management Strategy

II.5.1.3 Monitoring and Adaptive Management Program

The Monitoring and Adaptive Management Program for Alternative 2 would be the same as is described under the Preferred Alternative (see Section II.3.1.3).

II.5.1.4 Overview Description of Covered Activities

This section provides a description of the distribution, magnitude, and scope of activities under the DRECP for Alternative 2 under the DRECP. This describes how Alternative 2 would meet the renewable energy goals outlined in Section I.3.5. Renewable energy development technologies addressed under the DRECP include solar thermal, photovoltaic (PV) solar, wind, geothermal, and transmission.

On nonfederal lands, renewable energy and transmission siting, construction, operation, and decommissioning activities and conservation activities would be considered Covered Activities for incidental take permits under Section 2835 of the state Natural Community Conservation Planning Act and Section 10 of the federal Endangered Species Act. On BLM-administered lands, the BLM LUPA addresses renewable energy and transmission siting, construction, operation, and decommissioning activities, conservation activities, and other land use management decisions. The following describes the renewable energy generation-, transmission-, and conservation-related activities that would occur on both federal and nonfederal lands. The specific land use management decisions addressed by the BLM LUPA are described in Section II.5.2.

The section includes a summary of DFA distribution, and an estimated acreage associated with each technology. The description is subdivided by technology: solar, wind, geothermal, and transmission. For brevity, the description of the activities associated with siting, constructing, operating, and decommissioning are not repeated in this section as the information is identical to that which is provided in Section II.3.1.4.

In Alternative 2, renewable energy-related activities covered by the Plan would be confined to the DFAs. If the activities are not located within a DFA, they would no longer be considered a Covered Activity and would not enjoy the benefits the Plan affords. Generation development is focused in the West Mojave and Eastern Slopes, Imperial Borrego Valley, and Cadiz Valley and Chocolate Mountains ecoregion subareas, and around Barstow, with smaller areas in the Owens River Valley ecoregion subarea and on the Nevada border. Figure II.5-3 shows the DFAs for Alternative 2, and Appendix G provides figures of the DFAs for each ecoregion subarea in the Plan Area.

Table II.5-8a provides a DFA acreage summary by ecoregion subarea and by ecoregion subunit (i.e., finer-grained geographic subdivisions within each ecoregion subarea). Figure II.5-3 shows the corresponding ecoregion subunits.

Table II.5-8a
Alternative 2 Development Focus Areas by Ecoregion Subarea and Subunit

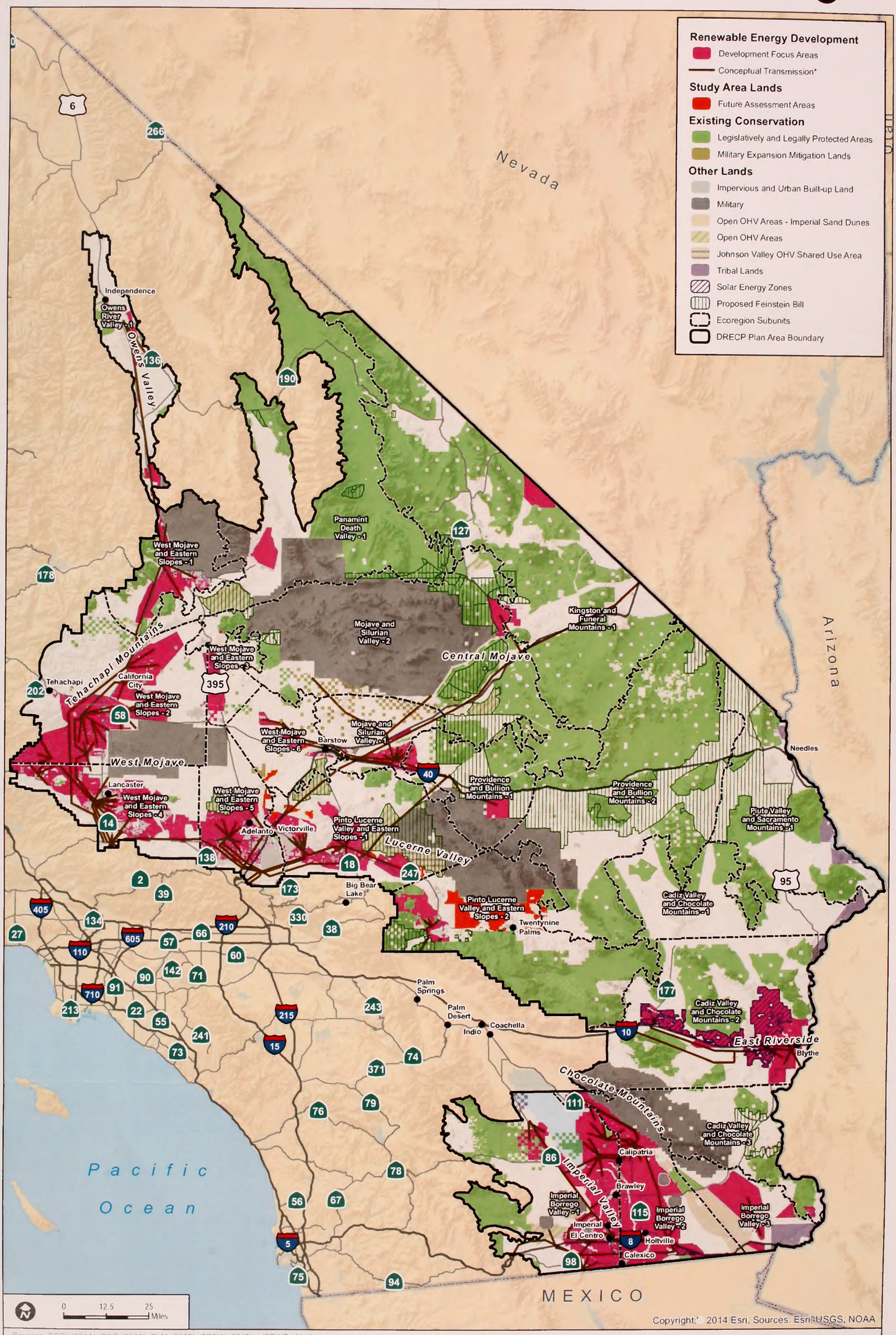
Ecoregion Subarea	Ecoregion Subunit	DFA Acreage
Cadiz Valley and Chocolate Mountains	Cadiz - 1	—
	Cadiz - 2	267,000
	Cadiz - 3	5,000
Imperial Borrego Valley	Imperial - 1	344,000
	Imperial - 2	389,000
	Imperial - 3	106,000
Kingston and Funeral Mountains	Kingston - 1	40,000
Mojave and Silurian Valley	Mojave - 1	42,000
	Mojave - 2	27,000
Owens River Valley	Owens -1	28,000
Panamint Death Valley	Panamint - 1	35,000
Pinto Lucerne Valley and Eastern Slopes	Pinto - 1	180,000
	Pinto - 2	49,000
Piute Valley and Sacramento Mountains	Piute - 1	—
Providence and Bullion Mountains	Providence - 1	46,000
	Providence - 2	—
West Mojave and Eastern Slopes	West Mojave - 1	88,000
	West Mojave - 2	396,000
	West Mojave - 3	47,000
	West Mojave - 4	224,000

Table II.5-8a
Alternative 2 Development Focus Areas by Ecoregion Subarea and Subunit

Ecoregion Subarea	Ecoregion Subunit	DFA Acreage
	West Mojave - 5	136,000
	West Mojave - 6	24,000
	Total DFA Acreage	**2,473,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

The distribution of different generation technologies varies depending on underlying factors that affect each technology. The method used to estimate the distribution of generation impacts across the Plan Area simultaneously accounts for the area available to each technology, potential interactions between technologies, and variation in the relative development potential of different DFAs. A more detailed description of the methodology is discussed in Chapter I.3 with additional detail provided in Appendix F. In the following section, each technology is discussed separately.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*Transmission lines shown are based on the DRECP Transmission Technical Group (TTG) Report, which provides a conceptual transmission plan for the DRECP alternatives and is not intended for siting or alignment purposes.

FIGURE II.5-3

Alternative 2 - Plan-wide DFAs

INTENTIONALLY LEFT BLANK

Table II.5-8b includes a summary of the DFAs by technology type by county. The technology type listed indicates what technologies are assumed feasible in the DFA. If multiple technologies are listed, that indicates that more than one renewable energy technology could be feasible in that DFA. DFAs suitable for solar only are the most common in most counties. DFAs suitable for solar and wind together make up the largest technology type category in Riverside and San Bernardino counties. Geothermal is only proposed in Imperial, Inyo, and San Bernardino counties under Alternative 2. Table II.5-8c includes a summary of the DFAs by ownership. For Alternative 2, nearly 70% of the DFAs are on nonfederal lands, and over 30% of the DFAs are on federal lands.

Table II.5-8b
Alternative 2 Development Focus Areas by Technology Type by County

Technology Type Category by County	DFA Acreage
Imperial County	**844,000**
Geothermal	114,000
Solar	364,000
Solar and geothermal	226,000
Solar and wind	111,000
Solar, Wind and geothermal	5,000
Wind	25,000
Wind and geothermal	40
Inyo County	**68,000**
Geothermal	8,000
Solar	36,000
Solar and geothermal	6,000
Solar and wind	16,000
Wind	1,000
Kern County	**478,000**
Solar	291,000
Solar and wind	129,000
Wind	57,000
Los Angeles County	**225,000**
Solar	204,000
Solar and wind	20,000
Wind	600
Riverside county	**268,000**
Solar	121,000
Solar and wind	144,000
Wind	4,000
San Bernardino County	**590,000**

Table II.5-8b
Alternative 2 Development Focus Areas by Technology Type by County

Technology Type Category by County	DFA Acreage
Geothermal	500
Solar	198,000
Solar and wind	286,000
Wind	106,000
San Diego County	-
Total	**2,473,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.5-8c
Alternative 2 Development Focus Areas by Ownership Class

Ownership Class	DFA Acreage
Federal Lands	
BLM-administered land	718,000
Other federal land	25,000
Nonfederal Lands	
Private land	1,649,000
State and local public land	81,000
Total	**2,473,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

The following sections contain a description of the distribution of the DFAs with an estimate of the total project area required for each technology and the associated area of permanent disturbance, a summary of which is provided in Table II.5-9. The estimated distribution of Covered Activities in the following sections aims to ensure that the DRECP evaluates a plausible magnitude of effects for each covered biological resource, such that the Plan would offer adequate minimization and mitigation for each covered technology.

Table II.5-9
Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies under Alternative 2

Technology	Estimated Permanent Disturbance (Acres)	Total Project Area (Acres)
Solar	86,000	86,000
Wind	15,000	270,000
Geothermal	17,000	17,000
Distributed generation	16,000	16,000
Total	**135,000**	**390,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.5.1.4.1 Solar Energy Generation (Including Utility-Scale Distributed Generation)[1]

This section provides an estimate of the size of impacts for Covered Activities associated with solar and utility-scale distributed generation projects that would be covered by the Plan under Alternative 2. Construction and operational activities are identical to those described in Section II.3.1.4.1 and listed in Table II.3-21 (Preferred Alternative). Although the area available to solar generation would be more extensive in the DFAs than for other technologies, not all DFAs were considered suitable for solar development. Consequently, it was assumed that solar development would occur within the subset of DFAs identified in Appendix G.

Solar projects can range from small-scale developments of a few megawatts (MWs) that occupy tens of acres up to 1,000 MW projects that occupy thousands of acres. Given the programmatic nature of the DRECP, extensive detailed analysis of effects that are project specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the acreage that would be affected by Covered Activities within different ecoregion subareas of the Plan Area. For the purpose of assessing the magnitude of impacts from ancillary facilities, construction impacts, and infrastructure, solar projects were assumed to be a mixture of 100 MW projects and 400 MW projects to

1 For the purpose of analysis, all distributed generation was considered to be located in the same areas as utility-scale solar, therefore requiring the same ancillary facilities (i.e., Covered Activities) as utility-scale solar projects.

represent the diversity of projects currently under review and construction. Similarly, all ground-mounted distributed generation projects were assumed to be 20 MW projects.

When estimating the impacts of solar projects it was assumed that the construction of projects would result in the loss of all habitat within the boundary of the project footprint. Two reasons are given for this: (1) Unlike other technologies, solar projects are generally fenced to exclude wildlife and result in modification to natural processes for the life of the project; and (2) although some vegetation may be preserved at some project locations, this is not universal, and conditions of service often lead to the removal of vegetation to reduce fire risk. Further, the extensive removal, modification, and grading within the project boundary, even if vegetation is not completely removed, may lead to edge effects that effectively modify the remaining vegetation communities. Therefore, the acreage requirements for roads, operation and maintenance facilities, and switchyards required for each facility are included in the overall estimated boundary of the solar project. Similarly, short-term impacts, such as construction and laydown yards, were assumed to be within the final boundary of the project and therefore subsumed within the boundary estimate. Table II.5-10 summarizes the long-term impacts for solar technologies, and provides the following information by ecoregion subarea:

- Total Long-Term Ground Disturbance – Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of all potential solar generation facility footprints, including operations and maintenance building, switchyards, and road construction impacts. All ancillary facilities were assumed to be within the boundary of the Plan Area and result in total permanent disturbance to the entire project site. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.
- Total Project Area – An estimate of the total area occupied by a given project. For area-intensive compact technologies like solar generation, the total project area is identical to the total permanent ground-conversion impacts.

Table II.5-10
Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 2

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	17,000	11,000	6,000
Imperial Borrego Valley	34,000	8,000	24,000
Kingston and Funeral Mountains	2,000	1,000	500
Mojave and Silurian Valley	3,000	2,000	1,000

Table II.5-10
Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 2

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Owens River Valley	1,000	400	700
Panamint Death Valley	800	600	200
Pinto Lucerne Valley and Eastern Slopes	8,000	2,000	6,000
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	1,000	900	500
West Mojave and Eastern Slopes	36,000	12,000	23,000
Total	**102,000**	**39,000**	**62,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

II.5.1.4.2 Wind Energy Generation

This section provides an estimate of the size of impacts for activities associated with wind projects that would be covered by the DRECP. Construction and operational activities are identical to those described in Section II.3.1.4.2 and listed in Table II.3-23 of the Preferred Alternative.

The area available to wind development was constrained by several factors, including areas where construction was considered infeasible, and areas where turbine construction has been precluded by ordinance or general policy. Consequently, it was assumed that wind development would occur within the subset of DFAs identified in Appendix G.

Wind projects can range from small-scale developments of a few MWs that occupy tens of acres up to several hundred MW projects that occupy thousands of acres. Given the programmatic nature of the DRECP, extensive detailed analysis of effects that are project specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the acreage that would be affected by Covered Activities within different ecoregion subareas of the Plan.

Wind projects result in a relatively diffuse impacts spread across a wide area. Turbines are widely spaced and connected by permanent access roads and transmission infrastructure, with a centralized maintenance facilities and switchyards. Unlike solar, not all the land within the boundary of a wind project was assumed to be permanently disturbed by project activities. For the purpose of analysis, estimates of disturbed acreage were the sum

of the estimated acreage required for turbine pads, roads, ancillary facilities, and supporting infrastructure. Short-term construction activities, such as laydown yards, were assumed to result in permanent disturbance within the project boundary, and were also included in the estimate of permanently disturbed acreage. In addition to estimates of ground disturbance, the area likely to be impacted by the operation of the turbine rotors (airspace) was also estimated. For analysis purposes, turbines were grouped into conceptual projects of up to 200 MWs to enable an estimation of impacts from ancillary facilities, roads, turbines, etc. Table II.5-11 summarizes the long-term impacts for wind technologies, and provides the following information by ecoregion subarea:

- Total Project Area – An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area (e.g., wind energy generation), the permanent impacts are distributed over a larger area.
- Estimated Long-Term Ground Disturbance – Estimated total acreage affected by Covered Activities. This is effectively a summation of all potential wind generation facility footprints, including individual turbine pad, operations and maintenance building, switchyard, and road construction impacts. This estimate also includes the additional impacts that would occur as a consequence of construction activities, including construction areas, laydown yards, and storage facilities. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.
- Turbine Rotor Swept Area – An estimate of the total aerial acreage affected by the rotation of turbine blades while a wind facility is operating.

Table II.5-11
Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subareas – Alternative 2

Ecoregion Subarea	Project Area (acres)			Long-Term Disturbance (acres)			Rotor Swept Area (acres)		
	Plan-Wide	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	63,000	56,000	7,000	4,000	3,000	400	2,000	2,000	200
Imperial Borrego Valley	12,000	5,000	7,000	700	300	400	400	100	200
Kingston and Funeral Mountains	5,000	5,000	—	300	300	—	100	100	—
Mojave and Silurian Valley	11,000	11,000	—	700	700	—	300	300	—

Table II.5-11
Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subareas – Alternative 2

Ecoregion Subarea	Project Area (acres)			Long-Term Disturbance (acres)			Rotor Swept Area (acres)		
	Plan-Wide	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*
Owens River Valley	4,000	—	4,000	200	—	200	100	—	100
Panamint Death Valley	1,000	1,000	—	100	100	—	—	—	—
Pinto Lucerne Valley and Eastern Slopes	65,000	24,000	41,000	4,000	1,000	2,000	2,000	800	1,000
Piute Valley, Sacramento Mountains	—	—	—	—	—	—	—	—	—
Providence and Bullion Mountains	13,000	11,000	2,000	800	600	100	400	300	100
West Mojave and Eastern Slopes	66,000	5,000	61,000	4,000	300	4,000	2,000	200	2,000
Total	**239,000**	**117,000**	**122,000**	**14,000**	**7,000**	**7,000**	**7,000**	**4,000**	**4,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

II.5.1.4.3 Geothermal Energy Generation

This section provides an estimate of the size of impacts for Covered Activities associated with geothermal projects that would be covered by the DRECP. Construction and operational activities are identical to those described in Section II.3.1.4.3 and listed in Table II.3-25 of the Preferred Alternative.

The area available to geothermal development was limited to areas in the Imperial Borrego Valley and part of the Owens River Valley ecoregion subareas, where geothermal resources are concentrated. Consequently, it was assumed that geothermal development would occur within the subset of DFAs identified in Appendix G.

Geothermal projects would be more limited in size (in the Plan Area) than other renewable energy projects. Recent projects vary from about 50 MW to 160 MW in size. For analysis within the DRECP, geothermal projects were assumed to typically be 50 MW in size. Given the programmatic nature of the Plan, extensive detailed analysis of effects that are project

specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the estimated acreage that would be affected by Covered Activities within different ecoregion subareas of the Plan.

Geothermal projects result in extensive impacts associated with the power block and ancillary facilities, with more dispersed impacts resulting from the well-fields. Well heads that inject and collect heat transfer fluids are widely spaced and connected by permanent access roads and pipelines to the centrally located power block and steam turbine facilities. All the land within the boundary of a geothermal project was assumed to be permanently disturbed by project activities. Estimates of disturbed acreage include the acreage required for well head pads, roads, ancillary facilities, and supporting infrastructure, and also includes the land fragmented by the roads, pipelines, and well pads in the well-field, which was assumed to retain no conservation value. Short-term construction activities, such as laydown yards, were assumed to result in permanent disturbance within the project boundary, and are also included in the estimate of permanently disturbed acreage. Table II.5-12 summarizes the long-term impacts for geothermal technologies, and provides the following information by ecoregion subarea:

- Estimated Long-Term Ground Disturbance – Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of all potential geothermal energy generation facility footprints, including operations and maintenance building, switchyard, and road construction impacts. This estimate also includes the additional impacts that occur as consequence of construction activities, and the fragmented land within the well-field.. Due to the difficulty of restoration in an arid environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.
- Total Project Area – An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area (e.g., geothermal energy generation), the permanent impacts are distributed over a larger area.

Table II.5-12
Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Alternative 2

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	—	—	—
Imperial Borrego Valley	16,000	6,000	10,000
Kingston and Funeral Mountains	—	—	—
Mojave and Silurian Valley	—	—	—

Table II.5-12
Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Alternative 2

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Owens River Valley	900	900	—
Panamint Death Valley	—	—	—
Pinto Lucerne Valley and Eastern Slopes	—	—	—
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	—	—	—
West Mojave and Eastern Slopes	—	—	—
Total	**17,000**	**7,000**	**10,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

II.5.1.4.4 Transmission

The transmission Covered Activities components for Alternative 2 would be the same as those described for the Preferred Alternative in Section II.3.1.4.4.

The ecoregional distribution of major transmission, substation, and gen-tie impacts described in Table II.5-13 provides an estimate of right-of-way (ROW) requirements in acres from which it was possible to estimate the relative impacts of transmission-related Covered Activities described in Section II.3.1.4.4.

- Estimated Long-Term Ground Disturbance – Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of transmission impacts. This estimate also includes impacts that occur as a consequence of construction activities, including construction areas, laydown yards, and storage facilities. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.
- Total Project Area – An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area, the permanent impacts are distributed over a larger area.

Table II.5-13
Right-of-Way Requirements for Transmission Associated with Renewable Energy Development by Ecoregion Subarea – Alternative 2

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	8,000	5,000	4,000
Imperial Borrego Valley	14,000	3,000	11,000
Kingston and Funeral Mountains	700	500	200
Mojave and Silurian Valley	1,000	800	700
Owens River Valley	700	400	300
Panamint Death Valley	—	—	—
Pinto Lucerne Valley and Eastern Slopes	6,000	2,000	4,000
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	1,000	800	400
West Mojave and Eastern Slopes	1,000	200	1,000
Total	**34,000**	**13,000**	**21,000**

Notes: All transmission disturbance data reflect intermediate disturbance values used for comparative purposes in the analysis. Disturbance area estimates reflecting the most recent Transmission Technical Group Report are provided in Appendix K.
The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

II.5.1.4.4.1 Transmission Outside the Plan Area

Transmission outside the Plan Area is not a Covered Activity under the DRECP. The potential direct effects of potential future transmission outside the Plan Area associated with development of covered renewable energy projects and transmission facilities inside the Plan Area are, however, programmatically described and analyzed in Volume IV for each environmental resource category. This section presents a description of the transmission facilities outside the Plan Area that are programmatically analyzed in Volume IV.

The assumptions used to calculate acreages of effects for transmission and substation facilities inside the Plan Area are the same as those used to calculate effects of transmission and substations outside the Plan Area, and are described in Section II.3.1.4.4. However, approval of the DRECP would not result in any approval of the potential future transmission lines outside the Plan Area that are discussed here. All future transmission lines outside the Plan Area would require new applications by the developer or utility, compliance with CEQA and NEPA as appropriate, and approvals from the developer (if

municipal utilities or irrigation districts) or from the California Public Utilities Commission (if investor-owned utilities) prior to construction.

Table II.5-14 provides the acreage of effects for transmission and substations outside of the DRECP boundary. For ease of analysis, the transmission lines and substations have been clustered into general geographic boundaries.

Table II.5-14
Right-of-Way Requirements for Transmission Outside the DRECP Plan Area Associated with Renewable Energy Development – Alternative 2

Geographic Area	Transmission	
	Acres	*Miles*
San Diego area	2,000	94
Los Angeles area	2,000	83
Central Valley	15,000	274
Rialto/Moreno Valley/Devers area	12,000	484
Total Outside Plan Area	**32,000**	**935**

Source: Transmission Technical Group Report, provided as Appendix K.

The new transmission lines outside the Plan Area are presented in the following list.

- **San Diego Area:** One 500-kilovolt (kV) line from the Imperial Valley Substation to the existing Sycamore Substation (San Diego).
- **Los Angeles Area:**
  - One 500 kV line from the existing Vincent Substation (just inside the DRECP boundary) to the existing Lighthipe Substation.
  - One 500 kV from the existing Vincent Substation (just inside the DRECP boundary) to the existing Mesa Substation.
  - One 500 kV Mead, Station 6 to Station 7 500 kV.
- **Central Valley:**
  - One 500 kV transmission line from the Whirlwind Substation (just inside the DRECP boundary) to the Pacific Gas and Electric (PG&E) Midway 500 kV Substation.
  - Two 500 kV lines from the PG&E Midway Substation to the Tesla/Tracy Substation.
- **Rialto/Moreno Valley/Devers Area:**
  - One 500 kV line from the Devers Substation to Vincent Substation.
  - One 500 kV line from the Devers Substation to Rancho Vista Substation.

- One 500 kV line from Colorado River Substation to existing Valley Substation. About 103 miles of this line would be outside the DRECP boundary.
- Three 500 kV lines from Midway X (Imperial Valley) to Devers Substation. About 200 miles of this corridor would be outside the DRECP boundary.

II.5.1.5 Plan Implementation

Plan implementation for Alternative 2 would be the same as that for the Preferred Alternative as described in Section II.3.1.5.

II.5.2 BLM LUPA Elements of Alternative 2

The BLM LUPA elements of Alternative 2 are the same elements as the Preferred Alternative (see Figure II.5-4).

As shown in Table II.5-15, approximately 9,834,000 acres within the Planning Area occur within the BLM LUPA on BLM-administered lands. Under Alternative 2, approximately 718,000 acres of DFAs occur on BLM-administered lands.

In this area, existing conservation totals 3,264,000 acres including 3,260,000 acres of LLPAs. All of the BLM LLPAs are Wilderness or Wilderness Study Areas and are managed to meet the statute of the Wilderness Act of 1964 and to ensure these congressionally designated areas meet DRECP conservation goals.

As shown in Table II.5-16, of the 5,191,000 acres of BLM LUPA conservation designations, 78,000 acres (2%) would be designated as Existing or Proposed ACEC, 4,228,000 acres (81%) would be Existing or Proposed ACEC or Wildlife Allocation and National Conservation Lands, 885,000 acres (17%) would be National Conservation Lands only, and 700 acres (less than 1%) would be Wildlife Allocation.

Table II.5-15
Interagency Alternative 2 Within the BLM LUPA

Alternative Components	Acreage[1]
DFAs	**718,000**
Study Area Lands	**29,000**
Future Assessment Areas	29,000
DRECP Plan-Wide Reserve Design Envelope	**8,455,000**
Existing conservation areas	3,264,000
BLM LUPA conservation designations	5,191,000
Urban Areas, Other Lands, and Undesignated Areas	**631,000**
Impervious and Urban Built-up Land	57,000
BLM Open OHV Areas	235,000

Table II.5-15
Interagency Alternative 2 Within the BLM LUPA

Alternative Components	Acreage[1]
Imperial Sand Dunes, including the BLM Open OHV Area	127,000
Johnson Valley OHV Shared Use Area	54,000
Undesignated Areas	157,000
Total	**9,834,000**

Notes: BLM LUPA conservation designations include NLCS lands, ACECs, and Wildlife Allocations. Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA would also designate approximately 2,463,000 acres of SRMAs on BLM-administered lands in addition to the 193,000 acres of existing SRMAs on BLM-administered lands, which are BLM designation overlays that overlap portions of the components provided in this table. Impervious and Urban Built-up Lands occurring within BLM LUPA conservation designations and DFAs were not explicitly included in the urban category reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

[1] Acreages reported are on BLM-administered lands only within the BLM LUPA area.

Table II.5-16
Alternative 2 BLM LUPA Conservation Designations Within the BLM LUPA

BLM LUPA Conservation Designation	Acreage[1,2]
NLCS	885,000
NLCS (and Existing ACEC)	1,228,000
NLCS (and Proposed ACEC)	2,904,000
NLCS (and Wildlife Allocation)	96,000
Existing ACEC	14,000
Proposed ACEC	64,000
Wildlife Allocation	700
Total	**5,191,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[1] Acreages reported are on BLM-administered lands only within the BLM LUPA area..

[2] Approximately 856,000 acres of BLM LUPA conservation designations on BLM-administered lands occur within existing conservation areas. These overlapping acres are not reported in this table.

In addition to the proposed BLM LUPA conservation designations, Alternative 2 includes proposed BLM LUPA Special Recreation Management Areas (SRMAs) as shown in Table II.5-17. Unlike the Preferred Alternative, Alternative 2 would not designate any Extensive Recreation Management Areas (ERMAs).

Table II.5-17
Alternative 2 Special Recreation Management Areas and Extensive Recreation Management Areas Within the BLM LUPA

SRMA/ERMA	Acreage[1]
Existing SRMA	193,000
Proposed SRMA	2,463,000
Proposed ERMA	—
Total	**2,656,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[1] Acreages reported are on BLM-administered lands only within the BLM LUPA area.

The proposed BLM LUPA would not modify existing energy corridors, including "corridors of concern" as defined in the Section 368 Energy Corridors settlement agreement described in Section I.2.1.7.7.

II.5.2.1 BLM Renewable Energy Policies

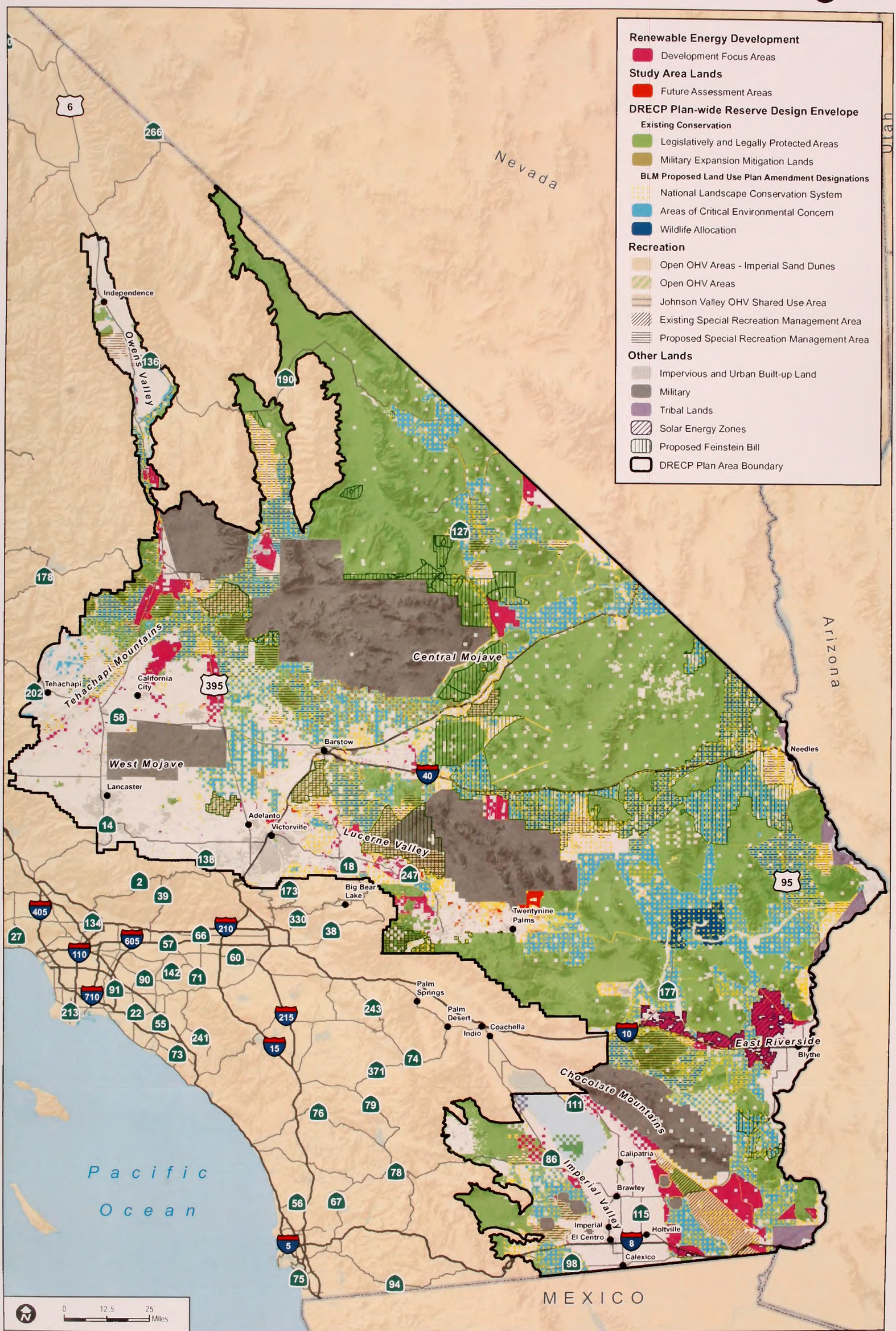
The BLM Renewable Energy Policies would be the same as in the Preferred Alternative.

II.5.2.2 BLM Conservation Areas

II.5.2.2.1 National Conservation Lands

This alternative includes all BLM lands in the California Desert Conservation Area (CDCA) except open OHV areas, DFAs, and active mine locations. Section 601 of the Federal Land Policy and Management Act of 1976 (Public Law 94-579; 43 U.S.C. 1701–1785) recognized the nationally significant values of the California desert in designating it as the California Desert Conservation Area. This alternative is based on a broad interpretation of Public Law 111-11 and the premise that all lands in the California desert have been determined by Congress to be nationally significant. Therefore, lands not focused on development or other intensive uses under the BLM's multiple-use mandate should be included as National Conservation Lands. This alternative would include existing transmission corridors. The use allocations regarding allowable uses respond to the larger renewable energy development footprint in this alternative by being the most restrictive of all alternatives regarding allowable uses.

This alternative would designate 5,188,000 acres as components of the National Conservation Lands on BLM-administered lands, which includes 856,000 acres within existing conservation areas (LLPAs and MEMLs) and 4,332,000 acres as part of the BLM LUPA conservation designations.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.5-4

Alternative 2 - BLM LUPA

INTENTIONALLY LEFT BLANK

II.5.2.2.1.1 Management of National Conservation Lands

1. Planning Area-Wide National Conservation Land Management Direction

Like the Preferred Alternative, the use allocations for the National Conservation Lands in the CDCA are the allowable uses that would apply to all National Conservation Lands within the CDCA. The use allocations for the Preferred Alternative are provided in the following list. For resources where there are no specific use allocations for National Conservation Lands, Plan-wide rules would apply unless otherwise specified in the Special Unit Management Plans (Appendix L).

- **Comprehensive Trails and Travel Management.** National Conservation Lands would be designated in accordance to the appropriate Trails and Travel Management Plan (TTMP)/Resource Management Plan (RMP), and future travel management planning will put the emphasis of travel allowed on designated routes that provide for enjoyment of values, or necessary administrative access to conserve, protect, and restore area values
- **Cultural Resources.** No allowable uses that result in adverse effects to historic properties as defined under Section 106 of the National Historic Preservation Act and the implementing regulations at 36 Code of Federal Regulations (CFR) Part 800 will be authorized.
- **Lands and Realty**
  - Rights-of-Way
    - **Sites Authorization.** National Conservation Lands would be exclusion areas.[2] Exceptions would only be considered where they clearly do not impact National Conservation Lands values. Site authorizations that protect or enhance conservation values, such as those granted as compensatory mitigation for Covered Activities within DFAs or for habitat restoration, would be allowed.
    - **Renewable Energy Generation.** National Conservation Lands would be exclusion areas for renewable energy ROWs.
    - **Linear ROWs.** Exclusion except for existing corridors. Exceptions only considered where they clearly don't impact National Conservation Lands values requires mitigation/compensation resulting in net benefit to National Conservation Lands unit.

[2] Defined in the BLM Land Use Planning Handbook (H-1601-1) as "areas which are not available for location of rights-of-way under any conditions."

- **Land Tenure**
  - Exchange, purchase, or donation would be permitted to acquire non-BLM lands within the National Conservation Lands unit. No lands would be disposed of in National Conservation Lands units.
  - National Conservation Lands inholdings would be a priority for acquisition from willing sellers. All inholdings would become part of the National Conservation Lands unit upon acquisition and be subject to associated management requirements.
- **Minerals**
  - Locatable Minerals
    - For the purposes of locatable minerals, National Conservation Lands would be treated as "controlled" or "limited" use areas in the CDCA, requiring a Plan of Operations for greater than casual use under 43 CFR 3809.11.
    - The BLM would develop priority list of subareas for potential withdrawal.
    - Initiate segregation of one subregion annually and complete mineral withdrawal review process (within 2-year time frame for each subregion).
  - **Saleable Minerals.** Saleable mineral development would be limited to approval on BLM parcels under 2,000 acres. Mitigation/compensation must result in net benefit to National Conservation Lands values
  - Leasable Minerals
    - National Conservation Lands would be unsuitable for all leasing.
    - The BLM would review National Conservation Lands values and undertake additional planning to determine if no surface occupancy leasing can be permitted in specific instances
- **Recreation and Visitor Services.** Competitive and Commercial Special Recreation Permits would be permitted.
- **Water Resources.** Apply for water rights on a case-by-case basis to protect water-dependent National Conservation Lands values.
- **Disturbance Caps.**[3] Development in National Conservation Lands would be limited to 0.25% of total authorized disturbance.

2. National Conservation Land Subareas — Description of Values to be Protected

The values protected in the National Conservation Lands are described in the following discussion. This alternative would designate all BLM-administered public

[3] Disturbance caps only apply to lands not already included under ACECs or Wildlife Allocation disturbance caps, as described in the Special Unit Management Plans in Appendix L.

lands in the CDCA as National Conservation Lands except DFAs and OHV Open Areas, so encompasses the most acres as National Conservation Lands.

3. **Area-Specific National Conservation Land and Area of Critical Environmental Concern Management Prescriptions**

   Similar to the Preferred Alternative, there is overlap with the ACEC designations, and management for individual units is described in the Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L.

II.5.2.2.1.2 Subarea Descriptions

Basin and Range Subarea

Ecological Values

Ecological values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- This alternative includes all ecological values described for the Preferred Alternative.
- It also includes the wildlife corridor between the El Paso Mountains and the Golden Valley Wilderness, which is habitat for the desert tortoise, burrowing owl (*Athene cunicularia*), golden eagle (*Aquila chrysaetos*), and Mohave ground squirrel, as well as a diversity of native species.
- National Conservation Lands in Alternative 2 include black toad (*Bufo exsul*) habitat on both sides of California State Highway 168, in contrast to the Preferred Alternative which does not include habitat south of the highway.

Cultural Values

Cultural values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- This alternative includes all cultural values described for the Preferred Alternative.
- The larger amount of intact landscape would include more cultural resources eligible for listing, nominated for listing, or listed on the National Register of Historic Places.
- National Conservation Lands would include more areas with the potential to be identified as cultural landscapes or archaeological districts during future tribal consultation or cultural resource studies.

Scientific Values

Scientific values of National Conservation Lands in Alternative 2 would compare to those in the Preferred Alternative in a manner consistent with the differences in ecological and cultural values as described above. The larger, intact tracts of National Conservation Lands would allow for more in-depth ecological research and landscape level studies of prehistoric and historic lifeways on these lands.

Acreage

This alternative would include approximately 590,000 acres of National Conservation Lands in the Basin and Range subarea.

Coachella Valley

Ecological Values

Ecological values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass all of the ecological values described for the Preferred Alternative.
- Inclusion of the noncontiguous public lands parcels of the Willow Hole-Edom Hill Preserve adds mesquite hummocks, a fan palm oasis, Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*), Little San Bernardino Mountains linanthus (*Linanthus maculatus*), Palm Springs round-tailed ground squirrel (*Spermophilus tereticaudus chlorus*), Palm Springs pocket mouse (*Perognathus longimembris bangsi*), burrowing owl, Coachella giant sand treader cricket (*Macrobaenetes valgum*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-breasted chat (*Icteria virens*), yellow warbler (*Dendroica petechia*), and additional critical habitat for the Coachella Valley fringe-toed lizard (*Uma inornata*).

Cultural Values

Cultural values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative in that the greatest number of significant prehistoric and traditional cultural sites would be encompassed by National Conservation Lands in this alternative, including all sites described for the Preferred Alternative.

Scientific Values

Scientific values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 157,000 acres of National Conservation Lands in the Coachella Valley subarea.

Colorado Desert

Ecological Values

Ecological values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include nearly all of the ecological values described for the Preferred Alternative.
- National Conservation Lands would connect each designated Wilderness in the subarea with at least one other Wilderness, encompassing areas of wildlife habitat connectivity. Areas of connectivity would include Cadiz Valley, Chuckwalla, Chuckwalla Chemehuevi linkage, McCoy Valley, McCoy Wash, Mule-McCoy, Picacho, Palen Ford, Upper McCoy, and Turtle Mountains Corridor.
- National Conservation Lands would encompass additional areas of wildlife habitat connectivity linking the Riverside Mountains and Whipple Mountains Wildernesses, and some of the habitat connectivity linking Joshua Tree National Park and Palen McCoy Wilderness.
- Slaughter Tree Wash and Big Wash, east of the Big Maria Mountains Wilderness, would be included in National Conservation Lands, encompassing microphyll woodland and part of the bird migration corridor near the Colorado River. Desert riparian zones at Vidal Wash would also be added.
- Less extensive areas of dune habitats at Palen Lake and Pinto Wash would be included.

Cultural Values

Cultural values of National Conservation Lands in Alternative 2 would compare to those described for the Preferred Alternative as follows:

- National Conservation Lands would encompass nearly all of the cultural values described for the Preferred Alternative.

- The additional lands would encompass more prehistoric and historic sites.
- Slightly less of the area of scenic values in northern Palen Valley would be included.

Scientific Values

Scientific values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass all of the scientific values described for the Preferred Alternative.
- The additional lands included in this alternative would allow for more ecological research opportunities on National Conservation Lands, addressing such topics as the effects of conserving large-scale landscapes, and the effectiveness of different management practices for plants and wildlife in response to climate change.
- Opportunities to research cultural resources would exist on the added National Conservation Lands.

Acreage

This alternative would include approximately 1,187,000 acres of National Conservation Lands in the Colorado Desert subarea.

Kingston-Amargosa

Ecological Values

Ecological values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass all of the ecological values described for the Preferred Alternative.
- This alternative would slightly expand the area encompassed by National Conservation Lands in the Shadow Valley area as compared to the Preferred Alternative, including areas important for genetic connectivity of desert tortoise and desert bighorn sheep.

Cultural Values

Cultural values of National Conservation Lands in Alternative 2 include all of those described under the Preferred Alternative.

Scientific Values

Scientific values of National Conservation Lands in Alternative 2 are the same as those identified for the Preferred Alternative.

Acreage

This alternative would include approximately 537,000 acres of National Conservation Lands in the Kingston–Amargosa subarea.

Lake Cahuilla

Ecological Values

Ecological values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- Nearly all of the ecological values described for the Preferred Alternative would be included in this alternative.
- National Conservation Lands in this alternative would include the Coyote Mountains, home to the barefoot gecko (*Coleonyx switaki*), a state-listed threatened species. Movement of Peninsular bighorn sheep (*Ovis canadensis nelsoni* Peninsular Ranges Distinct Population Segment) occurs through this area.
- Additional parts of the Yuha Basin are included as National Conservation Lands in this alternative. These contribute to a contiguous interconnected landscape that connects the highest elevations of the Peninsular Ranges in Anza-Borrego Desert State Park and the Cleveland National Forest with the Colorado/Sonoran Desert in the Imperial Valley and with similar undeveloped lands of northern Baja California, Mexico, encompassing areas that provide key physical and genetic connectivity for the Peninsular bighorn sheep.
- Acreage (but not additional key flat-tailed horned lizard or desert pupfish [*Cyprinodon macularius*] habitat) would be added to the National Conservation Lands linking the West Mesa with Anza-Borrego Desert State Park.
- National Conservation Lands would encompass two additional Unusual Plant Assemblages: Palm Oasis and Davies Valley Succulent Scrub Assemblage.
- National Conservation Lands in this alternative would include some areas of habitat connectivity in the southern Chocolate and Cargo Muchacho mountains. These would be less extensive than in the Preferred Alternative.

Cultural Values

Cultural values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- Most of the cultural values described for the Preferred Alternative would be included in this alternative.
- Additional National Conservation Lands in Alternative 2 include the World War II Desert Training Center site at Camp Pilot Knob (a location separate from the Pilot Knob prehistoric sites).
- National Conservation Lands would not include lands in the southern Chocolate and Cargo Muchacho mountains, in particular the Singer Geoglyphs or lands adjacent to the Little Picacho Wilderness that are important for their cultural resources and for the spiritual values of Indian tribes in the region, or the historic Tumco mining district.

Scientific Values

Scientific values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- Most of the scientific values identified for the Preferred Alternative would be included in this alternative.
- Paleontological values associated with the Coyote Mountains would be added in this alternative. The Coyote Mountains are a nationally significant fossil site where a 50-million-year record of geologic history is exposed, particularly the fossil-bearing Imperial Formation. This small mountain range has been famous for paleontological collecting and research since the nineteenth century. Fossils are predominantly marine invertebrates such as coral, mollusks, and gastropods; however, vertebrate species are also represented by shark teeth and portions of a whale. The visibility of these resources, coupled with dramatic geology and spectacular scenic landforms, have made this area famous for paleontologists, students, photographers, and other visitors.
- National Conservation Lands in this alternative would link geologically and visually related lands in and surrounding the Coyote Mountains Wilderness. Unusual geologic features found on the lands that would be linked (although not on the proposed National Conservation Lands themselves) include unusual wind caves and rare sand chimneys in the wilderness, to the north and west in Anza-Borrego Desert State Park, and on other BLM lands to the south.

Acreage

This alternative would include approximately 473,000 acres of National Conservation Lands in the Lake Cahuilla subarea.

Mojave and Silurian Valley

Ecological Values

Ecological values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include nearly all of the ecological values of Afton Canyon described for the Preferred Alternative.
- All critical habitat for desert tortoise, a federally listed threatened species, in Superior–Cronese and Ord–Rodman ACECs under BLM management in this subarea would be included as National Conservation Lands. This would be a much greater expanse than that in the Preferred Alternative
- Nearly all Mohave ground squirrel habitat in the subarea under BLM management, including nearly all of the habitat associated with the Fremont–Cramer ACEC, would be included as National Conservation Lands. This would be a much greater expanse than that in the Preferred Alternative.
- Additional Mojave fringe-toed lizard (*Uma scoparia*) habitats east of Barstow along the Mojave River, near Alvord Mountain, all of Coyote Lake, Cronese Lake, and Superior Lake would be included in National Conservation Lands
- National Conservation Lands would be added that encompass more habitat connectivity between the Mojave National Preserve and Death Valley National Park through the west side of Hollow Hills Wilderness, the west side of the Kingston Range Wilderness, and the Avawatz Mountains Wilderness Study Area.
- National Conservation Lands would include populations of rare plant species (California Rare Plant Rank 1.B) in addition to those listed under the Preferred Alternative: small-flowered androstephium (*Androstephium breviflorum*), Clokey's cryptantha (*Cryptantha clokeyi*), Mojave menodora (*Menodora spinescens* var. *mohavensis*), and creamy blazing-star (*Mentzelia tridentata*).
- Harper Lake, the site of focused management for recovery of wetland ecosystem function, would be added to the National Conservation Lands.
- No National Conservation Lands would be included in the large portion of the Silurian Valley that is within this subarea. The associated Mojave fringe-toed lizard habitat, and habitat connectivity and important migration areas for desert tortoise, desert bighorn sheep, and bats, would not be included in this alternative.

Cultural Values

Cultural values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include most of the cultural values described for the Preferred Alternative.
- Additional National Conservation Lands around Afton Canyon and the Black Mountain Rock Art District would include associated cultural resources as described for the Preferred Alternative.
- National Conservation Lands would not include historic mining areas in the Silurian Valley, the Boulder Transmission Line, or segments of the Old Spanish National Historic Trail[4] or Tonopah and Tidewater Railroad in the Silurian Valley. Segments of the historic trail and railroad in the adjoining Silurian Valley Corridor would be included.

Scientific Values

Scientific values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- Additional research opportunities would be available on National Conservation Lands corresponding with added ecological and cultural values described above. In particular, an expanded range of rare plant species encompassed by National Conservation Lands will include more opportunities to research the effectiveness of conservation methods to enhance habitats and populations of these species.
- Areas of paleontological values included in National Conservation Lands would increase in Rainbow Basin and slightly increase in the Manix area.
- Scientific value associated with cultural resources in the Silurian Valley would not be included in National Conservation Lands under this alternative.

Acreage

This alternative would include approximately 508,000 acres of National Conservation Lands in the Mojave and Silurian Valley subarea.

---

4 Although not included in the National Conservation Lands designated under Public Law 111-11, the Old Spanish Historic Trail remains a part of the NLCS as a National Historic Trail. Section II.5.2.2.2 discusses the National Historic Trail Management Corridor for this alternative.

Pinto, Lucerne Valley, and Eastern Slopes

Ecological Values

Ecological values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the ecological values described for the Preferred Alternative.
- This alternative would add National Conservation Lands between Twentynine Palms and Joshua Tree National Park, encompassing areas that are important for wildlife habitat connectivity.
- The existing Bendire's Thrasher ACEC is added to National Conservation Lands in this alternative.
- The Mojave Fishhook Cactus ACEC is added to National Conservation Lands in this alternative. It encompasses populations of the Mojave fishhook cactus (*Sclerocactus polyancistrus*), yellow-spined form; Mojave menodora (*Menodora spinescens* var. *mohavensis*); other plant species with restricted ranges; and habitat with connectivity values for several wildlife species.
- National Conservation Lands in this alternative encompass areas of habitat connectivity. These do not include lands linking the two units of the Bighorn Mountains Wilderness and extending toward the Pipes Canyon Preserve, San Gorgonio Wilderness, and Joshua Tree National Park.
- National Conservation Lands would include part of the Pipes Canyon Huge Joshua Trees Unusual Plant Assemblage.

Cultural Values

Cultural values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the cultural values described for the Preferred Alternative.
    - The cultural values associated with the Pipes Canyon area south of the Bighorn Wilderness, which is important to Native Americans and local residents, would not be included.

Scientific Values

Scientific values of National Conservation Lands in Alternative 2 would compare to those in the Preferred Alternative in a manner corresponding with changes in ecological and cultural values represented on these lands, as described above.

Acreage

This alternative would include approximately 460,000 acres of National Conservation Lands in the Pinto, Lucerne Valley, and Eastern Slopes subarea.

Piute Valley and Sacramento Mountains

Ecological Values

Ecological values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass all of the ecological values described for the Preferred Alternative.
- National Conservation Lands would include additional areas of habitat connectivity between the Dead Mountains and Chemehuevi Mountains wildernesses, and between the Chemehuevi Mountains and Whipple Mountains wildernesses.
- National Conservation Lands in this alternative include an area just east of the Whipple Mountains Wilderness with part of the only remaining population of saguaro cacti (*Carnegiea gigantea*) found in California, at the most westerly extent of the saguaro's range; and the only California occurrence of a plant community consisting of foothill paloverde desert scrub with saguaros towering over the smaller trees.
- All of the Chemehuevi Wash watershed would be included as National Conservation Lands.
- Additional National Conservation Lands would cover more populations of spiny-hair blazing star (*Mentzelia tricuspis*) and narrow-leaved psorothamnus (*Psorothamnus fremontii* var. *attenuatus*); and more colonies of rare bat species in the Sacramento Mountains.

Cultural Values

Cultural values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass all of the cultural values described for the Preferred Alternative.
- National Conservation Lands would encompass additional significant cultural values associated with prehistoric and historic sites adjacent to the Colorado River, between Dead Mountains, Chemehuevi Mountains, and Whipple Mountains wildernesses, including the West Well rock art site.
- National Conservation Lands would encompass additional significant cultural values throughout the Sacramento Mountains, including petroglyphs, pictographs, village sites, congregation areas, and spring sites. Among these would be additional sites on the east side of the Sacramento Mountains, including numerous village sites near the prehistoric Colorado River course; and a particularly intact 1.5 mile segment of the prehistoric trail system that traverses the mountains, with abundant rock art; caves and shelters; and a variety of artifacts indicating seasonal and continuous use including milling stones, potsherds, blades, lithic scatters, fire-cracked rocks, hearths, burnt and unburnt bone.

Scientific Values

Scientific values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- There would be more extensive opportunities on National Conservation Lands to test the effectiveness of large-scale habitat management practices, and different management practices for facilitating the movement of wildlife and terrestrial plants in response to climate change.
- The National Conservation Lands would cover a greater number of culturally significant Native American sites, offering more cultural research opportunities on these lands.

Acreage

This alternative would include approximately 497,000 acres of National Conservation Lands in the Piute Valley and Sacramento Mountains subarea.

South Mojave–Amboy

Ecological Values

Ecological values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass all of the ecological values described for the Preferred Alternative.
- Added National Conservation Lands between the Marble Mountains and the Sheephole Valley Wilderness encompass a broad corridor of connectivity. Added National Conservation Lands in the west end of the subarea, between the Ord–Rodman ACEC and the Superior–Crones ACEC, include habitat linkages for desert tortoise and linkages between the Rodman Mountains Wilderness and the Cady Mountains Wilderness Study Area.
- Bristol and Dale dry lakes, habitat for Mojave fringed-toed lizard, would be included in National Conservation Lands. The area around Dale Lake includes 3,000 acres connecting Cleghorn Lakes Wilderness, Sheephole Valley Wilderness, and the Pinto Mountain ACEC.
- Additional populations of rare plants are included in National Conservation Lands, particularly small-flowered androstephium, Emory's crucifixion-thorn (*Castela emoryi*), and white-margined beardtongue (*Penstemon albomarginatus)*, in the areas west of Pisgah Crater and east of Amboy Crater.

Cultural Values

Cultural values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass all of the cultural values described for the Preferred Alternative.
- Cultural resources on additional acreage, which may include many previously unrecorded sites, would be included.
- National Conservation Lands would include a greater area of the historic Atchinson, Topeka and Santa Fe railroad and of the proposed Mojave Trails National Monument.

Scientific Values

Scientific values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 775,000 acres of National Conservation Lands in the South Mojave–Amboy subarea.

Western Desert and Eastern Slopes

Ecological Values

Ecological values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the ecological values described for the Preferred Alternative. Additional areas of the following would be included: foraging habitat for golden eagles between Golden Valley Wilderness and El Paso Mountains Wilderness and between Golden Valley Wilderness and Grass Valley Wilderness; more Mohave ground squirrel habitat east of Highway 395, emphasizing the area between Ridgecrest to south of Barstow; Bendire's thrasher nesting habitat; and migratory flyway lands to the north and west of Dove Springs Canyon.
- The ranges of the following very rare plant species on BLM lands east of Highway 395 would be added to National Conservation Lands in this alternative: Desert cymopterus (*Cymopterus deserticola* – endemic to this subarea), Barstow woolly sunflower (*Eriophyllum mohavense* – near endemic in this subarea), and Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii* – endemic to this subarea).
- Inclusion of Harper Lake in the National Conservation Lands in this alternative would add potential western snowy plover (*Charadrius nivosus nivosus*) nesting habitat.
- National Conservation Lands would be shifted to a larger and more southern portion of desert tortoise critical habitat in the Fremont–Kramer ACEC, principally west and south of Cuddeback Lake, east of State Highway 395 and south to just before El Mirage Lake. The Desert Tortoise Research Natural Area and the Western Rand Mountains ACEC, which constitute part of the Fremont–Kramer unit of Desert Tortoise Critical Habitat, are not included as National Conservation Lands.

- A portion of the migratory bird flyway in the eastern Sierra Nevada would be included in National Conservation Lands. This area is less extensive as compared to the Preferred Alternative.
- National Conservation Lands would not include wildlife habitat linkages between the El Paso Mountains Wilderness and the Kiavah Wilderness.

Cultural Values

Cultural values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include most of the cultural resources described for the Preferred Alternative.
- The following would be added to National Conservation Lands: Walker Pass National Historic Landmark; more of the culturally important lands in the Black Mountain, Inscription Canyon, and Last Chance Canyon Archaeological Districts; and more of the 20 Mule Team Road east of Highway 395.
- Some Native American resources previously identified within the Jawbone–Butterbredt area would be omitted, while others would be added.
- The larger acreage of intact landscape included as National Conservation Lands represents areas that may be identified as cultural landscapes or archaeological districts during future tribal consultation or cultural resource studies.
- Most of the First Los Angeles Aqueduct north of Dove Springs in the Jawbone–Butterbredt ACEC would not be part of National Conservation Lands.

Scientific Values

Scientific values of National Conservation Lands in Alternative 2 compare to those in the Preferred Alternative as follows:

- Opportunities for scientific research in desert tortoise habitat would still be available on National Conservation Lands; however, the Research Natural Area with its focus on research and education would not be included.
- Opportunities for scientific research on the Mohave ground squirrel in the intact habitat between Ridgecrest and Barstow would be available on National Conservation Lands in the Cuddeback Lake area.
- Opportunities for research to improve Bendire's thrasher habitat would be more extensive on National Conservation Lands.

- The southern Sierra Nevada interface zone in the Jawbone–Butterbredt ACEC would include a greater range of elevations on National Conservation Lands for studies of species' adaptations to climate change.
- Larger intact tracts of BLM lands included as National Conservation Lands would be available for in-depth landscape level studies of prehistoric and historic lifeways.

Acreage

This alternative would include approximately 565,000 acres of National Conservation Lands in the Western Desert and Eastern Slopes subarea.

II.5.2.2.2 National Trails

II.5.2.2.2.1 National Scenic and Historic Trails

Goals and Objectives

Goals and objectives for National Scenic and Historic Trails (NSHT) would be the same as the Preferred Alternative.

Conservation and Management Actions for Pacific Crest National Scenic Trail, and Juan Bautista de Anza and Old Spanish National Historic Trails Management Corridors

- **Management Corridor Width.** Establish a National Trail Management Corridor, width generally 10 miles from centerline.
- **Management of Trail Corridors.** Manage National Trails as components of the BLM's NLCS. Where National Trails overlap other National Conservation Lands, the more protective CMAs or land use allocations will apply. Within these areas, the BLM will support the nature and purposes of the designated National Trails.
- **Lands and Realty**
  - Rights-of-Way
    - **Site Authorizations.** NSHT Management Corridors would be exclusion areas.
    - **Linear ROWs.** NSHT Management Corridors would be exclusion areas except in designated transmission corridors. Where development in transmission corridors affects trail management corridors, an analysis must be performed to ensure that it does not substantially interfere with the nature

and purposes of the trail, and that mitigation/compensation results in a net benefit to the trail.

- **Renewable Energy ROWs.** Exclude cultural landscapes, high potential historic sites, and high potential route segments identified along national historic trails management corridors from transmission except in approved DFAs. Where development affects national scenic and historic trail management corridors, an analysis must be performed to ensure that it does not substantially interfere with the nature and purposes of the trail, and that mitigation/compensation results in a net benefit to the trail.

- **Land Tenure.** Exchange, purchase, or donation of lands within NSHT Management Corridors would be allowed; disposal of land within NSHT Management Corridors would not be permitted.

- Minerals
  - **Locatable Minerals.** The BLM would propose NSHT Management Corridors for withdrawal from mineral entry. Withdrawals would be subject to valid existing rights.
  - **Saleable Minerals.** NSHT Management Corridors would be unavailable for saleable mineral development.
  - **Leasable Minerals.** NSHT Management Corridors would be unavailable for mineral leasing.
- **Recreation.** Competitive Special Recreation Permits would not be permitted. Commercial Special Recreation Permits would be limited to those uses that provide for enjoyment and appreciation of NSHT values resources, qualities, values, and associated settings, and the primary use or uses.
- **Cultural Resources.** No allowable uses that result in adverse effects to historic properties as defined under Section 106 of National Historic Preservation Act and the implementing regulations at 36 CFR Part 800 will be authorized.
- **Visual Resources Management.** All NSHT Management Corridors will be designated as Visual Resource Management (VRM) class II, except within approved transmission corridors (VRM Class III) and DFAs (VRM Class IV). However, state-of-the-art VRM best management practices for renewable energy will be employed commensurate with the protection of nationally significant scenic resources and cultural landscapes, and other identified resources, qualities, values, and associated settings and the primary use or uses to minimize the level of intrusion and protect trail settings.

- **Mitigation Requirements.** If a segment of a National Scenic or Historic Trail or trail under study for possible designation traverses a DFA, it will be subject to mitigation for impacts to trail resources, qualities, values, and associated settings, and the primary use or uses, including, but not limited to, and not in priority order: avoidance, the cost of trail relocation, on-site mitigation, and off-site mitigation. Compensation can include acquisition or restoration of corridor features and landscapes will be at a minimum of 2:1, and must result in a net benefit to the overall national trail management corridor. Development of Covered Activities in high potential route segments must not substantially interfere with the nature and purposes of the National Trail.

II.5.2.2.2.2 National Recreation Trails

Management for National Recreation Trails would be the same as under the Preferred Alternative.

II.5.2.2.3 Areas of Critical Environmental Concern

Alternative 2 would include 123 ACECs totaling approximately 5,020,000 acres (nonoverlapping ACEC acres) on BLM-administered lands (includes ACECs within Existing Protected Areas). Specific management and maps for ACECs under this alternative are included in the Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L.

II.5.2.2.4 Wildlife Allocations

This alternative would include 96,700 acres of Wildlife Allocations on BLM-administered lands (includes Wildlife Allocations within NLCS). Descriptions and maps are included in the Special Unit Management Plans (NLCS and ACEC) in Appendix L.

II.5.2.2.5 Special Recreation Management Areas

This alternative would include 28 SRMAs (2,656,000 acres on BLM-administered lands). Descriptions, maps, and management actions for each SRMA under this alternative are included in SRMA Management Plans in Appendix L.

II.5.2.2.6 Lands Managed to Protect Wilderness Characteristics

Under Alternative 2, all acreage that was inventoried and found to have wilderness characteristics, except those lands within DFAs and transmission corridors, would be managed to protect these characteristics (see Figure II.5-5). In summary, of the 633,000 acres found to have wilderness characteristics 317,000 acres would be managed to protect those wilderness characteristics.

II.5.2.3 BLM-Specific CMAs

The following CMAs are different than the Preferred Alternative. For all other resources, see the Preferred Alternative Section II.3.2.3.

II.5.2.3.1 Lands and Realty

CMAs for Lands and Realty would be the same as in the Preferred Alternative, except for Land Exchanges and Land Sales, as described in Section II.5.2.3.1.2.

II.5.2.3.1.1 CMAs for the Entire Planning Area

- In nondesignated lands (i.e., lands not covered by the specific CMAs), make lands available for disposal through exchange or land sale.

II.5.2.3.1.2 CMAs in Development Focus Areas and DRECP Study Areas

- Make lands within DFAs available for disposal by sale or exchange under Section 203(a)(1), 203(a)(3), 206 and 209 of the Federal Land Policy and Management Act.
- In DRECP Study Areas, make lands available for sale or exchange.

II.5.2.3.1.3 CMAs in National Conservation Lands

- Make lands within National Conservation Lands available for exchange, purchase, or donation in accordance with the CMAs outlined for National Conservation Lands in Section II.3.2.2.1.1.
- Make lands within National Conservation Lands unavailable for disposal.

II.5.2.3.1.4 CMAs in Areas of Critical Environmental Concern

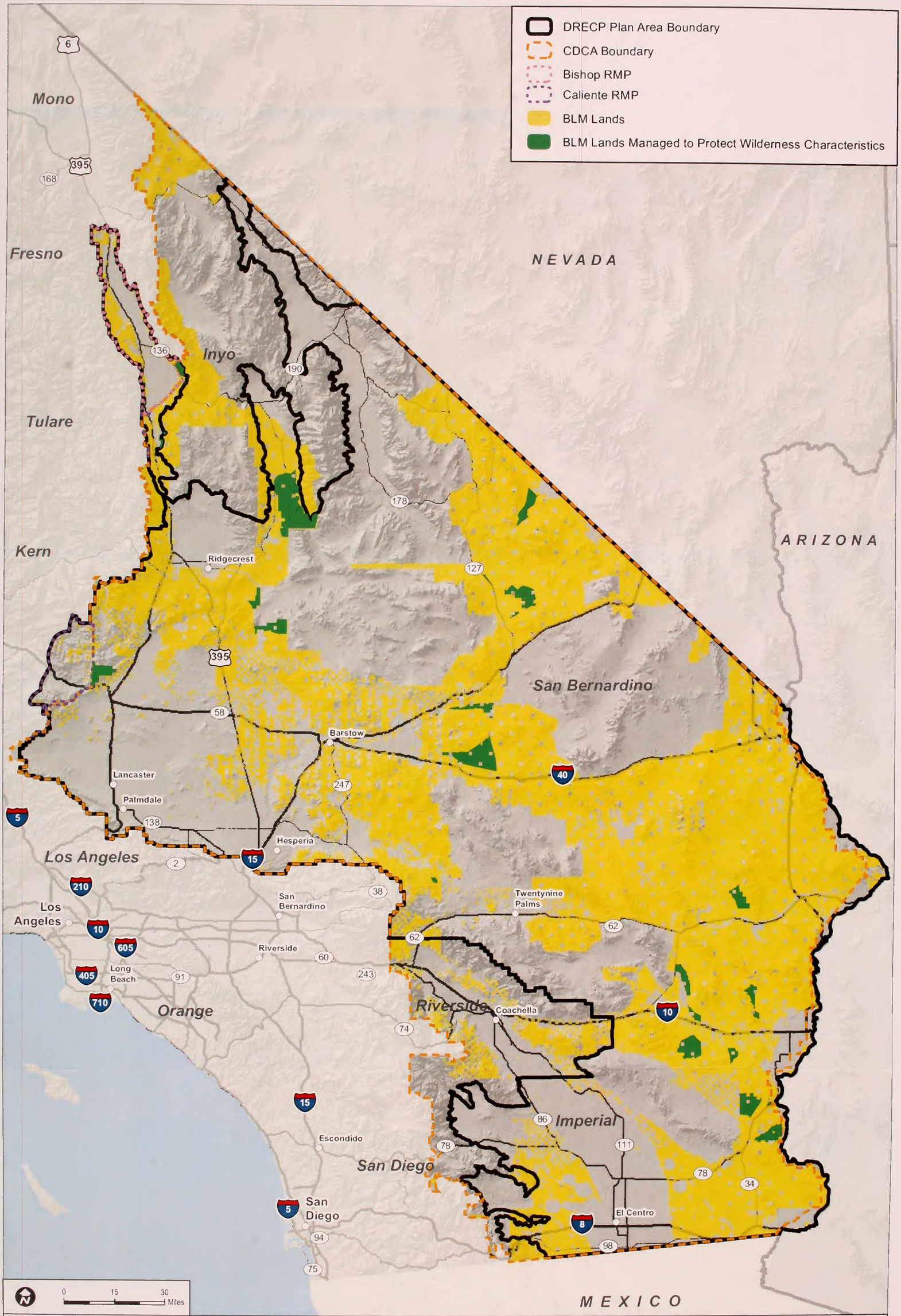
- Acquire lands in ACECs through exchange, purchase, or donation.
- Make lands in ACECs unavailable for disposal.

Conservation and Management Actions in Wildlife Allocations

- Acquire lands in Wildlife Allocations through exchange, purchase, or donation.
- Make lands in Wildlife Allocations unavailable for disposal.

Conservation and Management Actions in Special Recreation Management Areas

- Acquire lands in SRMAs through exchange, purchase, or donation.
- Make lands in SRMAs unavailable for disposal.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.5-5

Alternative 2 - BLM Lands Managed to Protect Wilderness Characteristics

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_II\figII.5-5.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

Conservation and Management Actions in Lands Managed to Protect Wilderness Characteristics

- Acquire lands managed to protect wilderness characteristics through exchange.
- Make lands managed to protect wilderness characteristics unavailable for disposal.

II.5.2.3.2 Soil, Water, and Water-Dependent Resources

CMAs for soil, water, and water-dependent resources would be the same as in the Preferred, except within DFAs, as described below.

II.5.2.3.2.1 CMAs in Development Focus Areas

- Limit disturbance of sensitive soil areas, so that no more than 20% of the sensitive soil areas within a proposed project footprint shall be disturbed for construction.
- Limit disturbance of sand dune areas, so that no more than 5% of sand dune areas within a proposed project footprint shall be disturbed for construction.
- Limit disturbance of sand flow corridors, so that no more than 5% of the sand flow corridors within a proposed project footprint shall be disturbed for construction.
- Limit disturbance of desert pavement, so that no more than 5% of the desert pavement within a proposed project footprint shall be disturbed for construction.
- Avoid development in flood plain, unless such development can be mitigated.
    - Exceptions: Exceptions to any of these stipulations may be granted by the authorized officer if the operator submits a plan that demonstrates:
        - The impacts from the proposed action are temporary;
        - The impacts minimal or can be adequately mitigated; *and*
        - Critical resources, including threatened and endangered species, are fully protected.
    - Modifications: No modifications will be granted.
    - Waivers: No waivers will be granted.

II.5.2.3.3 Visual Resources Management

Figure II.5-6 shows VRM Classes under this alternative. CMAs under this alternative would be the same as under the Preferred Alternative.

II.5.2.3.4 Wilderness Characteristics

All lands identified for management to protect wilderness characteristics would be closed to all mechanized and motorized transport

II.5.2.4 CDCA Plan Amendments

II.5.2.4.1 Multiple-Use Classes

The amendments to the multiple-use classes would be the same as the Preferred Alternative.

II.5.2.4.2 Visual Resource Management Classes and National Conservation Lands Outside of the DRECP

VRM Classes and National Conservation Land designations in the CDCA outside of the Plan Area are described in Section II.5.2.2.1 and Section II.5.2.3.3.

II.5.3 NCCP Elements of Alternative 2

The following provides an overview of the NCCP elements of Alternative 2. At the broadest level, the NCCP includes elements related to Covered Activities and conservation elements.

As described for the Preferred Alternative, each of the NCCP alternatives includes the full range of Covered Activities anticipated under the DRECP for each of the interagency Plan-wide alternatives. The Plan-wide description of Covered Activities serves as the description of Covered Activities for the NCCP alternatives.

The Natural Community Conservation Planning Act requires that NCCPs provide for the conservation and management of Covered Species and natural communities on a landscape or ecosystem level through the creation and long-term management of habitat reserves and the application of other equivalent conservation measures. To reflect the conservation that would occur under the NCCP, the NCCP elements of each alternative define the following means of providing conservation within the DRECP Plan-Wide Reserve Design Envelope: an NCCP Conceptual Plan-Wide Reserve Design, a DRECP NCCP Reserve Design, and other conservation actions.

Reserve design features and other conservation actions within the NCCP alternatives are consistent with and nested within the DRECP Plan-Wide Reserve Design Envelope in the interagency Plan-wide alternatives, but differ in terms of how reserve design features are grouped with in the NCCP Conceptual Plan-Wide Reserve Design and the DRECP NCCP Reserve Design. Table II.5-18 summarizes the NCCP elements of Alternative 2. As shown in Table II.5-18, the DRECP NCCP Reserve Design covers approximately 811,000 acres of BLM and non-BLM lands. Figure II.5-7 depicts the NCCP for Alternative 2. Refer to Appendix N

for a description of how the Plan-wide description of the alternative serves as the description of the NCCP for the DRECP.

Table II.5-18
NCCP for Alternative 2

NCCP Components	Acreage
DFAs	**2,473,000**
Study Area Lands	**109,000**
Future Assessment Areas	109,000
DRECP Plan-Wide Reserve Design Envelope	**15,084,000**
Existing conservation areas	7,662,000
NCCP Conceptual Plan-Wide Reserve Design	2,730,000
Inside the DRECP NCCP Reserve Design	811,000
BLM LUPA conservation designations	507,000
Biological Conservation Priority Areas on non-BLM lands	304,000
Outside the DRECP NCCP Reserve Design	1,920,000
BLM LUPA conservation designations	1,448,000
Biological Conservation Priority Areas on non-BLM lands	472,000
BLM LUPA conservation designations outside the NCCP Conceptual Plan-Wide Reserve Design	3,233,000
Biological Conservation Planning Areas on non-BLM lands	1,458,000
Urban Areas, Other Lands, and Undesignated Areas	**4,919,000**
Plan Area Total	**22,585,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.5.4 GCP Elements of Alternative 2

As described in Section II.3.4 for the Preferred Alternative, the DRECP's GCP elements include a streamlined permitting process for renewable energy development by nonfederal project proponents in the Plan Area. This section is intended to provide the description of the GCP elements of the DRECP for Alternative 2.

II.5.4.1 Overview of the Nonfederal GCP Lands of Alternative 2

The GCP component of Alternative 2 includes all nonfederal lands within the DRECP DFAs and Conservation Planning Areas, as well as nonfederal inholdings within existing conservation areas and BLM-administered lands in the Plan Area; these lands comprise the GCP Permit Area in the Plan Area. The larger GCP Plan Area encompasses the GCP Permit

Area as well as Priority Conservation Areas outside the GCP Permit Area where permittee non-acquisition mitigation measures may be implemented (i.e., BLM-administered lands corresponding to the DRECP NCCP Reserve Design). Nonfederal lands include privately owned lands and lands owned by state and local jurisdictions. The conservation strategy and Covered Activities under the GCP would be consistent with the DRECP. Table II.5-19 provides a summary of Alternative 2 within the GCP component of the DRECP; Figure II.5-8 depicts Alternative 2 within the GCP area.

As shown in Table II.5-19, the GCP portion of the Plan Area covers a total of 1,730,000 acres of DFAs on nonfederal lands (70% of the total DFAs in Alternative 2). The biological resources environmental setting/affected environment for the GCP portion of the Plan Area is described in Volume III, Section III.7.11. The impact analysis for Alternative 2 on nonfederal lands within the GCP area is provided in Section IV.7.3.4.4.

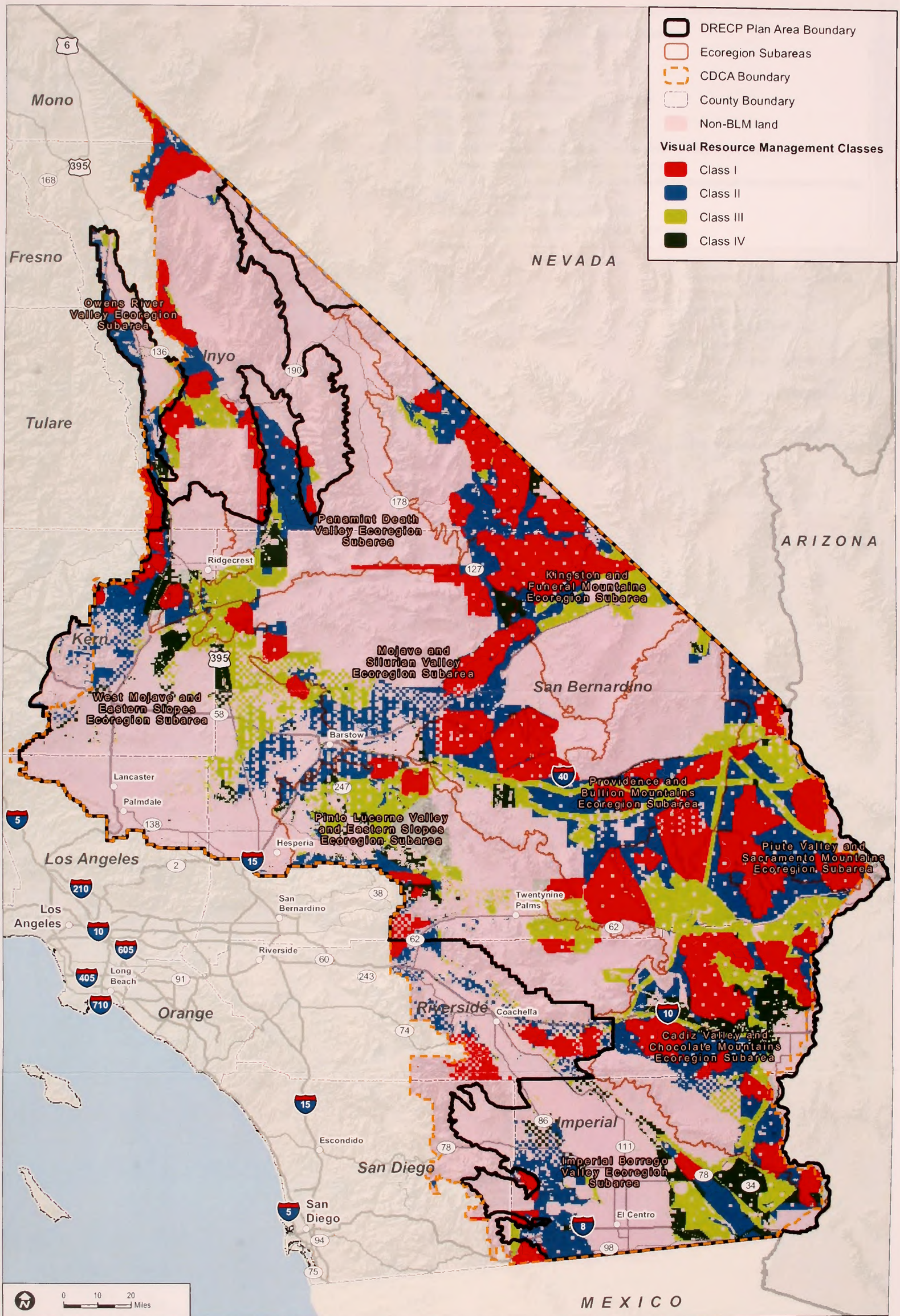
Table II.5-19
Alternative 2 Within the GCP

Alternative Components	Acreage
DFAs (Nonfederal Lands Only)	**1,730,000**
Study Area Lands (Nonfederal Lands Only)	**80,000**
Future Assessment Areas	80,000
DRECP Plan-Wide Reserve Design Envelope (Nonfederal Lands Only)	**2,596,000**
Existing conservation areas	434,000
BLM LUPA conservation designations	1,041,000
Conservation Planning Areas	1,121,000

Notes: Urban Areas, Other Lands, and Undesignated Areas also occur on nonfederal lands but are not reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.5.4.2 Overview of the GCP Permitting Process

The GCP permitting process under Alternative 2 would be the same as is described for the Preferred Alternative in Section II.3.4.2 and in Appendix M.



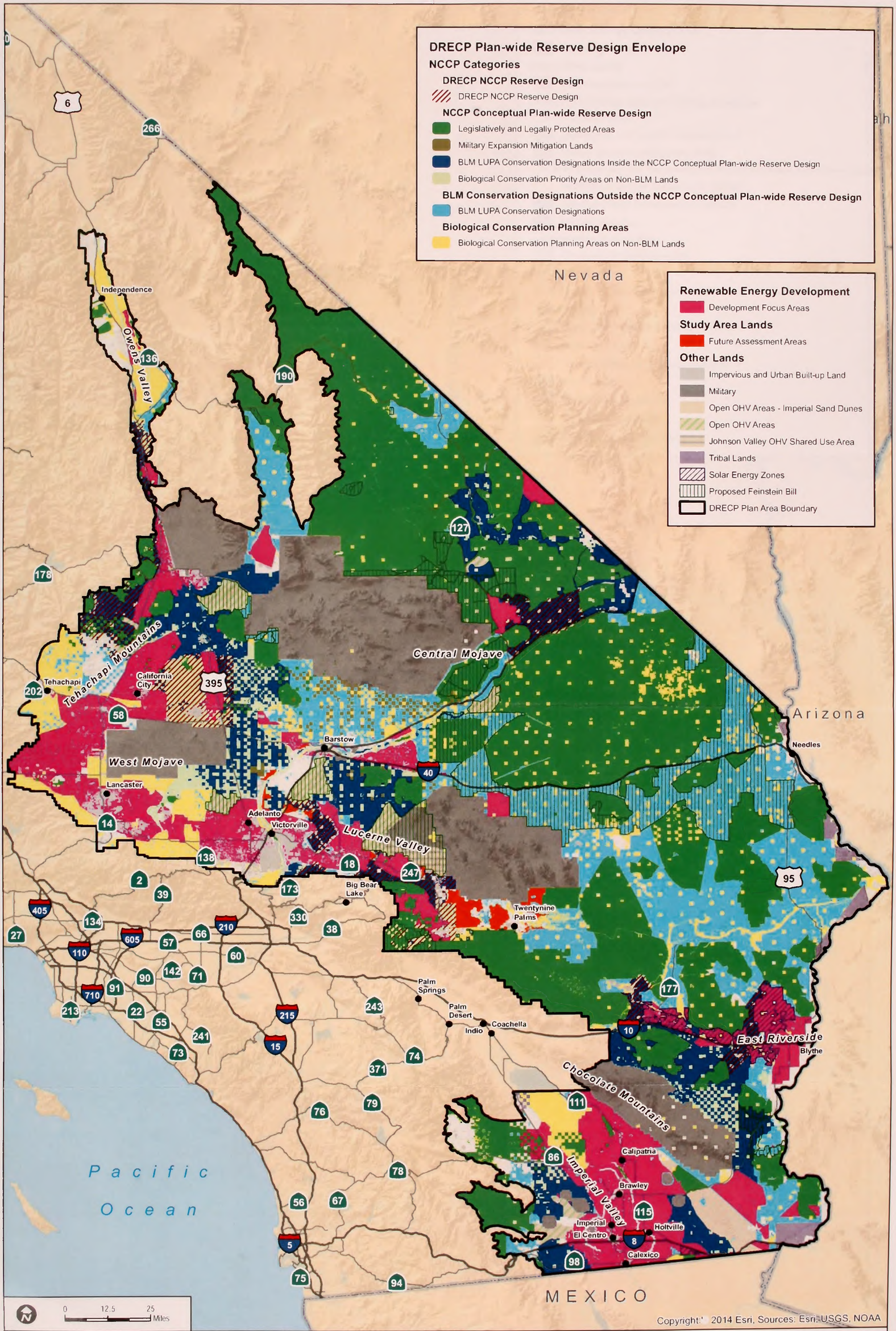
Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.5-6

Alternative 2 - BLM Visual Resource Management Classes

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_II\figII.5-6.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

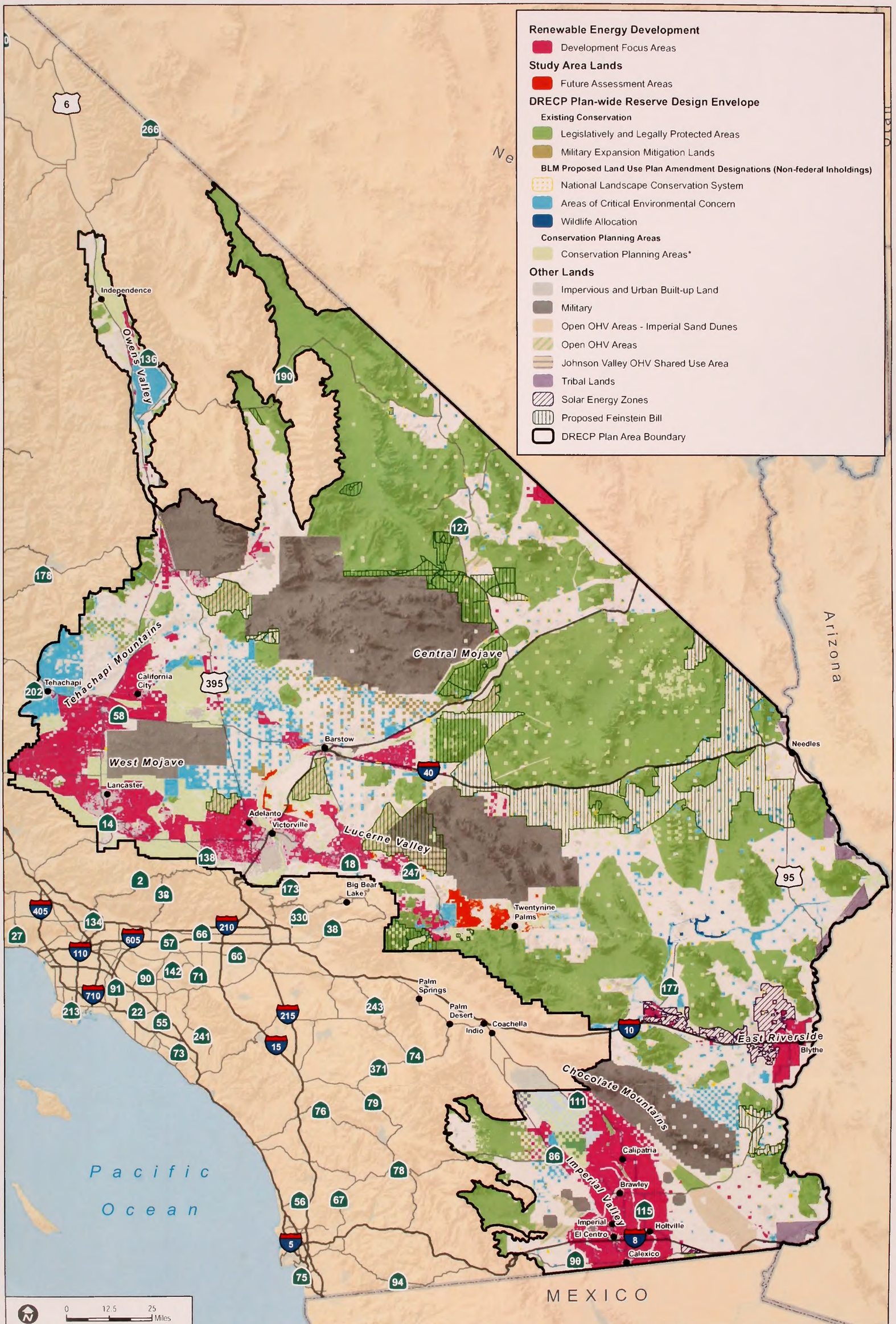


Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.5-7

Alternative 2 - Natural Community Conservation Plan

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.5-8

Alternative 2 - General Conservation Plan

INTENTIONALLY LEFT BLANK

II.6 ALTERNATIVE 3

Alternative 3 is one of five action alternatives considered and analyzed in the Desert Renewable Energy Conservation Plan (DRECP or Plan) and Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The description of Alternative 3 is first provided at an interagency level (Section II.6.1), which describes all Plan elements of the alternative. After the interagency description, the individual elements of the alternative are described, including the Bureau of Land Management (BLM) Land Use Plan Amendment (LUPA) elements of the DRECP (Section II.6.2), the Natural Community Conservation Plan (NCCP) elements of the DRECP (Section II.6.3), and the General Conservation Plan (GCP) elements of the DRECP (Section II.6.4).

II.6.1 Interagency Description of Alternative 3

The interagency description of Alternative 3 includes the following main sections: Overview of Alternative 3, Conservation Strategy, Monitoring and Adaptive Management Program, Description of the Covered Activities, and Plan Implementation. The description of Alternative 3 for the DRECP and EIR/EIS encompasses the overall conservation strategy and description of Covered Activities on federal and nonfederal lands (i.e., state, county, city, and privately owned lands) within the Plan Area.

II.6.1.1 Overview of Alternative 3

The following provides a Plan-wide overview of Alternative 3. Alternative 3 integrates the renewable energy and resource conservation with other existing uses in the Plan Area and includes BLM LUPA elements, NCCP elements, and GCP elements.

Under Alternative 3 for the DRECP, an interagency conservation strategy for the Plan Area would be established that includes a streamlined process for the permitting of renewable energy and transmission development on both federal and nonfederal lands and a BLM LUPA providing Conservation and Management Actions (CMAs) for resources throughout the Plan Area on BLM-administered lands. Like the Preferred Alternative, Alternative 3 would consist of Development Focus Areas (DFAs), Study Area Lands, and the DRECP Plan-Wide Reserve Design Envelope (including existing conservation areas, BLM LUPA conservation designations, and Conservation Planning Areas), Impervious and Urban Built-up Lands, Other Lands (including Military, Open Off-Highway Vehicle [OHV] Areas, Tribal Lands), and Undesignated Areas. These areas are defined in Section II.3.1, Interagency Description of the Preferred Alternative.

The BLM LUPA (Section II.6.2) provides the land use plan amendment description related to these Plan components on BLM-administered lands, and it also describes the Special Recreation Management Areas (SRMAs) designations and other CMAs for resources on

BLM-administered lands. The NCCP (Section II.6.3) and GCP for nonfederal lands (Section II.6.4) describe how these Plan components would provide for incidental take authorization of Covered Species under Section 2835 of the state Natural Community Conservation Planning Act and Section 10 of the federal Endangered Species Act.

Alternatives under the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA), including Alternative 3, must consider potential impacts on all aspects of the human environment, both the natural environment and the built environment, including biological and nonbiological resources. Additionally, Appendix M contains all the required components of a GCP.

Figure II.6-1 provides the Plan-wide map for Alternative 3.

Table II.6-1 provides an overview summary for Alternative 3. In summary, Alternative 3 would include approximately 1,405,000 acres of DFA. Study Area Lands include 11,000 acres of Future Assessment Areas. The DRECP Plan-wide Reserve Design Envelope would include 7,662,000 acres of existing conservation areas, 6261,000 acres of BLM LUPA conservation designations, and 1,238,000 acres of Conservation Planning Areas. Of the over 19 million acres of the Plan Area outside of Military Lands, BLM Open OHV Areas, and Tribal Lands, there are approximately 13,565,000 acres of federally owned or administered lands and 5,420,000 of nonfederal lands. The BLM LUPA elements of Alternative 3 are described in Section II.6.2; the NCCP elements of Alternative 3 are described in Section II.6.3; and the GCP elements of Alternative 3 addressing nonfederal lands are described in Section II.6.4. Exhibit II.6-1 graphically displays the components of Alternative 3.

Table II.6-1
Interagency DRECP Plan-Wide Alternative 3

Alternative Components	Acreage
DFAs	1,405,000
Study Area Lands	11,000
Future Assessment Areas	11,000
DRECP Plan-Wide Reserve Design Envelope	15,161,000
Existing conservation areas	7,662,000
BLM LUPA conservation designations	6,261,000
Conservation Planning Areas	1,238,000
Urban Areas, Other Lands, and Undesignated Areas	6,008,000
Impervious and Urban Built-up Land	514,000
Military Lands	3,019,000
Open OHV Areas	264,000
Imperial Sand Dunes, including the BLM Open OHV Area	132,000

Table II.6-1
Interagency DRECP Plan-Wide Alternative 3

Alternative Components	Acreage
Johnson Valley OHV Shared Use Area	56,000
Tribal Lands	129,000
Undesignated Areas	1,895,000
Total	**22,585,000**

Notes: This Plan-wide alternative summary includes both federal lands and nonfederal lands. The summary specific to BLM-administered lands is provided in Section II.6.2 and the summary specific to nonfederal lands is provided in Section II.6.4. Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. The BLM LUPA would also designate approximately 2,531,000 acres of Special Recreation Management Areas (SRMAs) in addition to the 193,000 acres of existing SRMAs, which are BLM designation overlays that overlap portions of the components provided in this table and described in Section II.6.2. Impervious and urban built-up lands occur within BLM LUPA conservation designations and DFAs were not explicitly included in the urban category reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

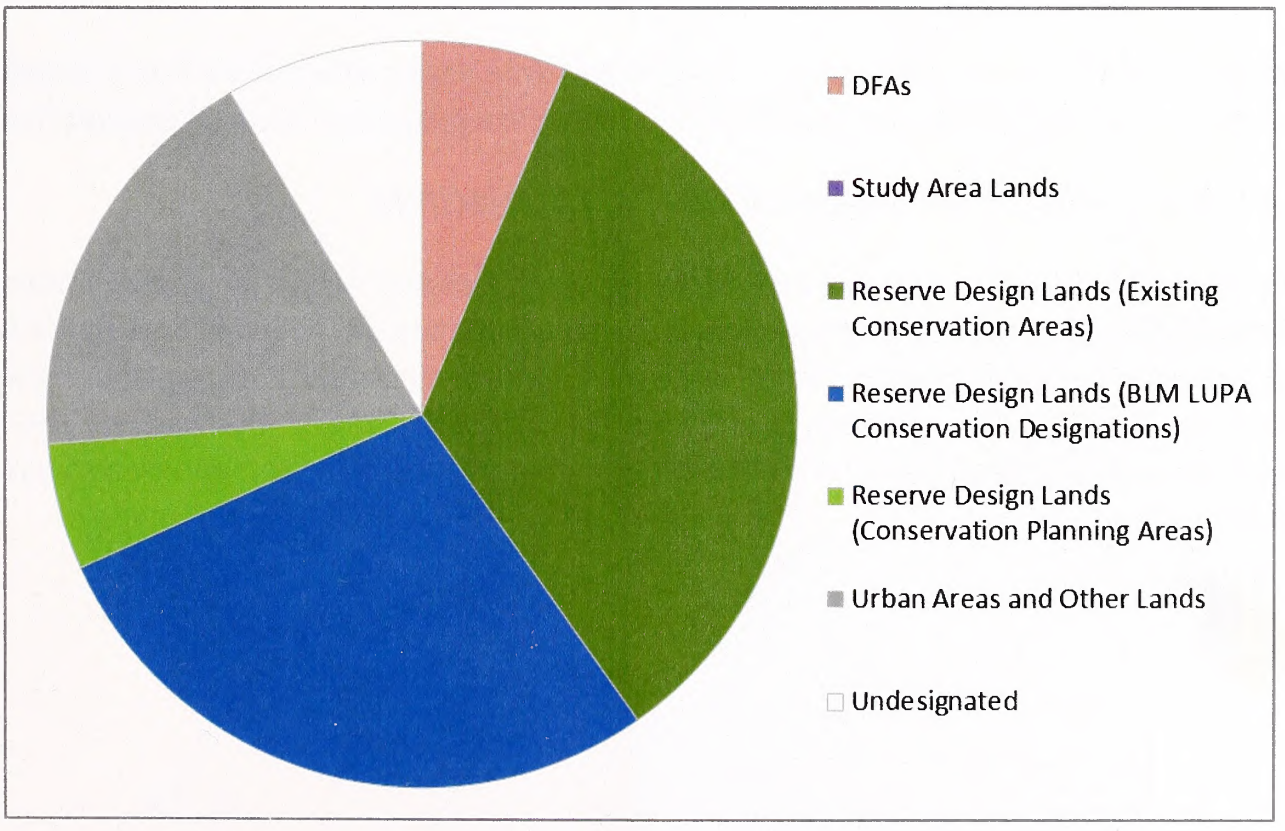


Exhibit II.6-1 Components of Alternative 3

II.6.1.2 Conservation Strategy

The Plan-wide conservation strategy for the DRECP was developed through the planning process described in Volume I, Chapter I.3. The process included: (1) establishing the conservation focus on biological, cultural, recreation, and visual resources; (2) gathering baseline information; (3) identifying Biological Goals and Objectives (BGOs) and goals and objectives for nonbiological resources on BLM-administered land; (4) developing a comprehensive reserve design; (4) developing biological CMAs and CMAs for nonbiological resources on BLM land; and (6) developing a Monitoring and Adaptive Management Program. The approach and structure of the conservation strategy for Alternative 3 is the same as the conservation strategy for the Preferred Alternative.

II.6.1.2.1 Overview of the Structure and Content of the Biological Conservation Strategy for Alternative 3

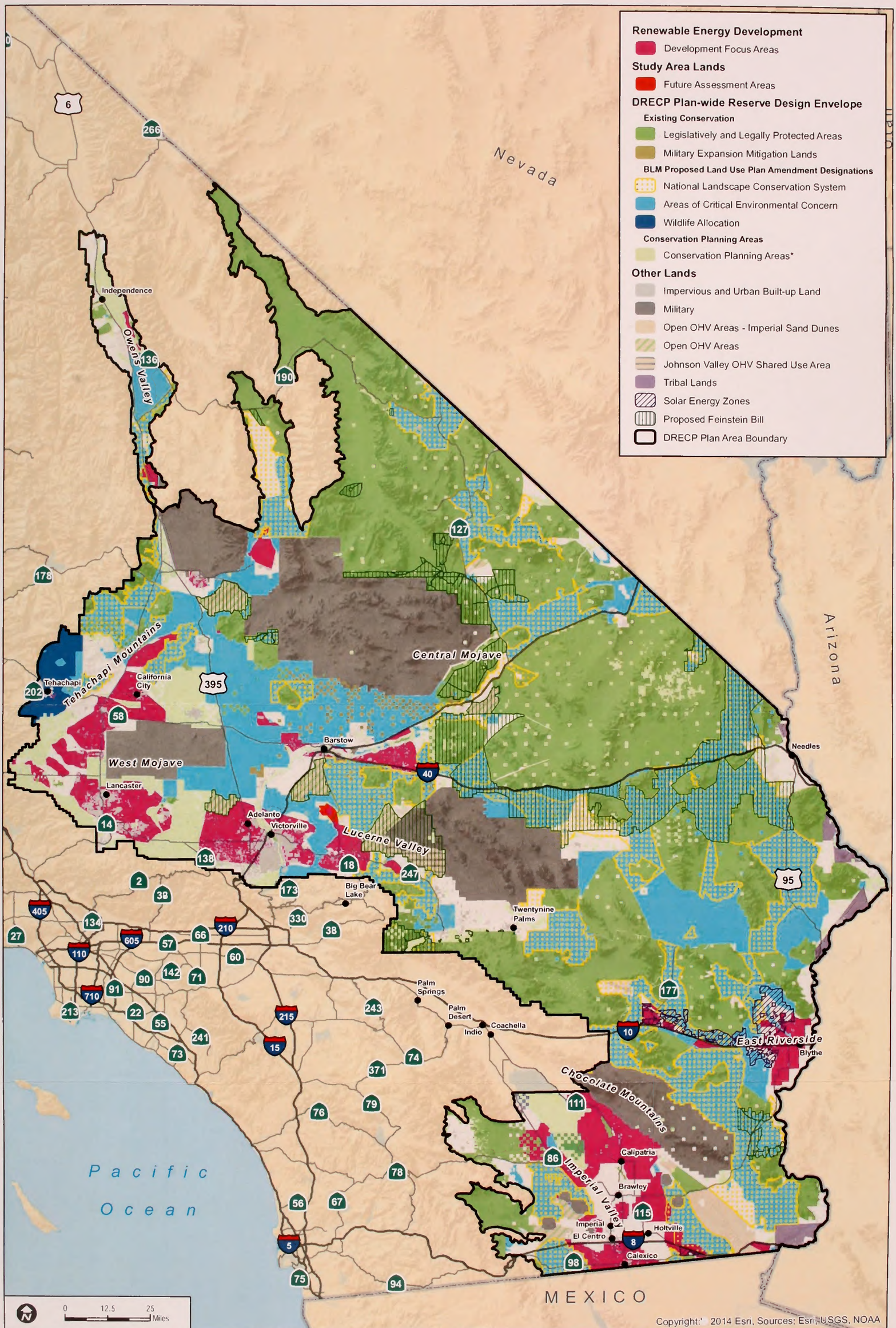
The approach and structure of the conservation strategy under Alternative 3 are the same as that for the Preferred Alternative as described in Section II.3.1.2.

II.6.1.2.2 DRECP Proposed Covered Species List

The proposed Covered Species list would be the same under Alternative 3 as it is under the Preferred Alternative. See Section II.3.1.2.2 for the proposed Covered Species list.

II.6.1.2.3 Plan-Wide Biological Goals and Objectives

The Plan-wide BGOs provide the broad guiding principles and define the desired outcome of the DRECP conservation strategy. The Plan-wide BGOs are described in Section I.3.4.3 and are provided in Appendix C at the landscape, natural community, and species levels. The Plan-wide BGOs are common to and apply to each of the DRECP alternatives. The Step-Down Biological Objectives describe the contribution of DRECP implementation towards achieving the Plan-wide BGOs.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.6-1

Alternative 3

INTENTIONALLY LEFT BLANK

II.6.1.2.4 DRECP Plan-Wide Reserve Design Envelope

The DRECP Plan-Wide Reserve Design Envelope for Alternative 3 was developed based on the biological reserve design process described in Section I.3.4.4. The reserve design is the mapped expression of Plan-wide BGOs. Additionally, an interagency Plan-Wide Conservation Priority Area has been identified. This area represents the highest priority area for the creation and long-term management of habitat reserves for the conservation of the 37 proposed Covered Species and representative examples of the natural communities and processes that support them in the Plan Area. The interagency Plan-Wide Conservation Priority Area was the basis for the NCCP Conceptual Plan-wide Reserve Design of each alternative.

Overall, the DRECP Plan-Wide Reserve Design Envelope for Alternative 3 would cover 80% of the Plan Area (excluding Military Lands, Tribal Lands, and BLM Open OHV Areas), which includes 7,662,000 acres of existing conservation areas, 6,261,000 acres of BLM LUPA conservation designations, and 1,238,000 acres of Conservation Planning Areas. Over half of the DRECP Plan-Wide Reserve Design Envelope under Alternative 3 is made up of existing conservation areas (Legislatively and Legally Protected Areas [LLPAs] and Military Expansion Mitigation Lands [MEMLs]). Approximately 41% of the DRECP Plan-Wide Reserve Design Envelope for Alternative 3 is made up of existing and proposed BLM LUPA conservation designations including combinations of ACECs, National Landscape Conservation System (NLCS), and Wildlife Allocations, and approximately 8% of the DRECP Plan-Wide Reserve Design Envelope for Alternative 3 is comprised of Conservation Planning Areas.

The interagency Plan-Wide Conservation Priority Area within the reserve design envelope covers approximately 1,878,000 acres. This includes 1,688,000 acres of BLM LUPA conservation designations (1,293,000 acres on BLM-administered lands and 394,000 acres of non-BLM inholdings) and 190,000 acres of Conservation Planning Areas.

The DRECP Plan-Wide Reserve Design Envelope for Alternative 3 is comprised of an interconnected network of federal and nonfederal (both public and private) lands that spans seven counties, multiple ownerships, and ten ecoregion subareas of the Mojave and Colorado/Sonoran deserts of California. Figure II.6-2 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 3,and Appendix G provides figures of the reserve design envelope for each ecoregion subarea in the Plan Area. Table II.6-2 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 3 by County. Table II.6-3 shows the DRECP Plan-Wide Reserve Design Envelope for under Alternative 3 by ownership. Table II.6-4 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 3 by ecoregion subarea.

Table II.6-2
DRECP Plan-Wide Reserve Design Envelope for Alternative 3 by County

County	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Imperial County	274,000	740,000	141,000	1,155,000
Inyo County	1,921,000	609,000	137,000	2,668,000
Kern County	135,000	549,000	232,000	916,000
Los Angeles County	6,000	37,000	276,000	319,000
Riverside County	982,000	724,000	37,000	1,743,000
San Bernardino County	4,145,000	3,602,000	408,000	8,155,000
San Diego County	199,000	0	6,000	205,000
Total	**7,662,000**	**6,261,000**	**1,238,000**	**15,161,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. These include both existing and proposed conservation designations. The reserve design envelope also includes an interagency Plan-wide Conservation Priority Area that covered 1,878,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.6-3
DRECP Plan-Wide Reserve Design Envelope for Alternative 3 by Ownership Class

Ownership Class	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Federal Lands				
BLM-administered land	3,279,000	5,030,000	—	8,309,000
Other federal land	3,949,000	9,000	63,000	4,022,000
Nonfederal Lands				
Private land	31,000	985,000	903,000	1,920,000
State and local public land	403,000	237,000	271,000	910,000
Total	**7,662,000**	**6,261,000**	**1,238,000**	**15,161,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. These include both existing and proposed conservation designations. The reserve design envelope also includes an interagency Plan-wide Conservation Priority Area that covered 1,878,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to

the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.6-4
DRECP Plan-Wide Reserve Design Envelope for Alternative 3 by Ecoregion Subarea

Ecoregion Subarea	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Cadiz Valley and Chocolate Mountains	842,000	1,448,000	51,000	2,342,000
Imperial Borrego Valley	355,000	486,000	137,000	978,000
Kingston and Funeral Mountains	1,767,000	528,000	84,000	2,379,000
Mojave and Silurian Valley	786,000	513,000	49,000	1,348,000
Owens River Valley	32,000	158,000	89,000	278,000
Panamint Death Valley	1,253,000	307,000	15,000	1,574,000
Pinto Lucerne Valley and Eastern Slopes	739,000	518,000	74,000	1,332,000
Piute Valley and Sacramento Mountains	423,000	443,000	29,000	895,000
Providence and Bullion Mountains	1,305,000	810,000	117,000	2,232,000
West Mojave and Eastern Slopes	162,000	1,049,000	593,000	1,804,000
Total	**7,662,000**	**6,261,000**	**1,238,000**	**15,161,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. These include both existing and proposed conservation designations. The reserve design envelope also includes an interagency Plan-wide Conservation Priority Area that covered 1,878,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Existing Conservation

The Plan Area encompasses existing conservation areas that include LLPAs and MEMLs, which include among other designations Wilderness Areas, Wilderness Study Areas, National Parks, National Preserve, and California State Parks. LLPAs serve as the building blocks of the reserve design with existing boundaries and management regimes around which the BLM LUPA conservation designations and Conservation Planning Areas were designed. Existing conservation areas are the same for all alternatives. A full description of the existing conservation areas is provided in Section I.3.4.4 under the reserve design

process. The existing conservation areas of the reserve design are shown on Figure II.6-2 and the ecoregion subarea maps of the reserve design in Appendix G.

BLM LUPA Conservation Designations

The BLM LUPA conservation designations are a critical component of the reserve design for the DRECP. These include existing and newly proposed NLCS designations, ACEC designations, and Wildlife Allocations. The land unit names included in BLM LUPA conservation designations in the reserve design by ecoregion subarea are provided in Section II.6.2 and Appendix L. The BLM LUPA conservation designations component of the reserve design is shown on Figure II.6-2 and the ecoregion subarea maps of the reserve design in Appendix G.

Conservation Planning Areas

Conservation Planning Areas are the portions of the reserve design located on private and non-BLM public lands that occur outside of existing conservation areas and BLM LUPA conservation designations. Reserve areas would be assembled by acquiring land or conservation easements from willing sellers within the Conservation Planning Areas to provide compensatory mitigation for Covered Activities. The Conservation Planning Areas component of the reserve design is shown on Figure II.6-2 and the ecoregion subarea maps of the reserve design in Appendix G.

II.6.1.2.5 Biological Conservation and Management Actions

The biological CMAs under Alternative 3 would be the same as those for the Preferred Alternative described in Section II.3.1.2.5, except as described in the following discussion. The CMAs related to BLM LUPA conservation designations under Alternative 3 are described in Section II.6.2 and in the BLM unit-specific worksheets in Appendix L.

- **Exceptions to the Preferred Alternative CMAs.** The Plan-wide CMAs, landscape-level CMAs, Natural Communities and Covered Species CMAs in the DFAs, Natural Communities and Covered Species CMAs in the Reserve, and the Transmission-specific CMAs under the heading "Exceptions to the Preferred Alternative CMAs" will specify the CMA code (e.g., RIP-WET-1) that corresponds to the specific CMA listed in the biological CMAs for the Preferred Alternative that will not be implemented for Alternative 3.
- **Additional CMAs to the Preferred Alternative.** The Plan-wide CMAs, landscape-level CMAs, Natural Communities and Covered Species CMAs in the DFAs, Natural Communities and Covered Species CMAs in the Reserve, and the Transmission-specific CMAs will list the additional biological CMAs under the heading "Additional CMAs to the Preferred Alternative" that will be implemented specifically for Alternative 3 in addition to the CMAs described for the Preferred Alternative.



Copyright © 2014 Esri, Sources: Esri, USGS, NOAA

Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.6-2

Alternative 3 - Plan-wide Reserve Design Envelope

INTENTIONALLY LEFT BLANK

The following provides the biological CMAs for Alternative 3, including the CMAs listed in the Preferred Alternative that will not be implemented and any additional CMAs that will specifically be implemented for Alternative 3 in addition to the biological CMAs in the Preferred Alternative.

II.6.1.2.5.1 Avoidance and Minimization CMAs

Alternative 3 would implement avoidance and minimization CMAs including the Avoidance and Minimization CMAs in the Preferred Alternative with the exceptions and additions as described in Section II.6.1.2.5.2 through Section II.6.1.2.5.6.

II.6.1.2.5.2 Plan-Wide Avoidance and Minimization CMAs

Under Alternative 3, the Plan-Wide Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.2) will be implemented with no exceptions or additions.

II.6.1.2.5.3 Landscape-Level Avoidance and Minimization CMAs

Under Alternative 3, the Landscape-Level Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.3) will be implemented with no exceptions or additions.

II.6.1.2.5.4 Natural Communities and Covered Species Avoidance and Minimization CMAs in DFAs

Under Alternative 3 the Natural Communities and Covered Species Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.4) will be implemented with no exceptions or additions.

II.6.1.2.5.5 Natural Communities and Covered Species Avoidance and Minimization CMAs in the Reserve

Under Alternative 3 the Natural Communities and Covered Species Avoidance and Minimization CMAs in the Reserve listed in the Preferred Alternative (Section II.3.1.2.5.5) will be implemented with no exceptions or additions.

II.6.1.2.5.6 Transmission Avoidance and Minimization CMAs

Under Alternative 3, the Transmission Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.6) will be implemented with no exceptions or additions.

II.6.1.2.5.7 Compensation CMAs

Under Alternative 3 the Compensation CMAs listed in the Preferred Alternative (Section II.3.1.2.5.7) will be implemented with no exceptions or additions.

II.6.1.3 Monitoring and Adaptive Management Program

The Monitoring and Adaptive Management Program for Alternative 3 would be the same as is described under the Preferred Alternative (see Section II.3.1.3).

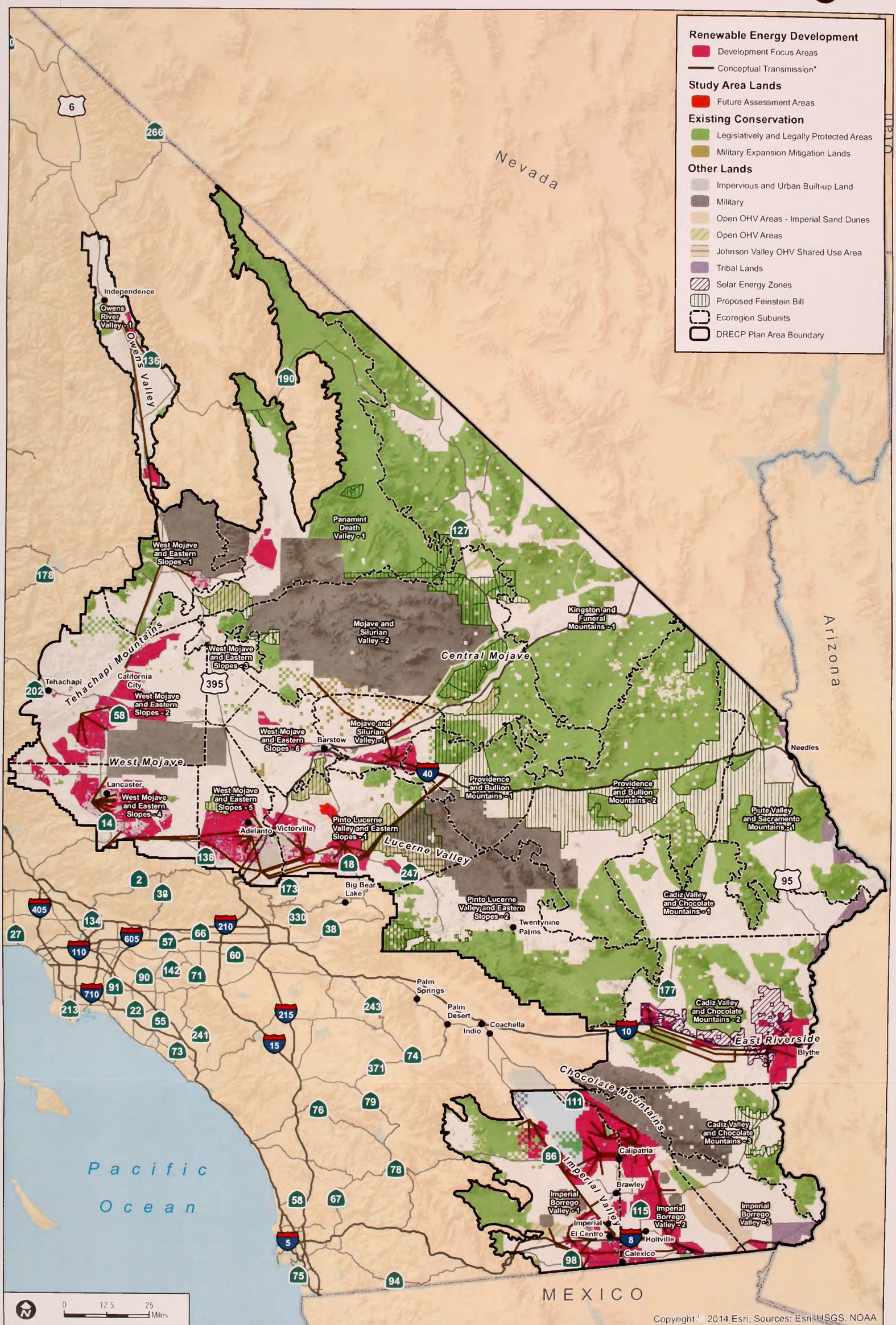
II.6.1.4 Overview Description of Covered Activities

This section provides a description of the distribution, magnitude, and scope of activities under the DRECP for Alternative 3. This describes how Alternative 3 would meet the renewable energy goals outlined in Section I.3.5. Renewable energy development technologies addressed under the DRECP include solar thermal, photovoltaic (PV) solar, wind, geothermal, and transmission.

On nonfederal lands, renewable energy and transmission siting, construction, operation, and decommissioning activities and conservation activities would be considered Covered Activities for incidental take permits under Section 2835 of the state Natural Community Conservation Planning Act and Section 10 of the federal Endangered Species Act. On BLM-administered lands, the BLM LUPA addresses renewable energy and transmission siting, construction, operation, and decommissioning activities, conservation activities, and other land use management decisions. The following describes the renewable energy generation-, transmission-, and conservation-related activities that would occur on both federal and nonfederal lands. The specific land use management decisions addressed by the BLM LUPA are described in Section II.6.2.

The section includes a summary of DFA distribution, and an estimated acreage associated with each technology. The description is subdivided by technology: solar, wind, geothermal, and transmission. For brevity, the description of the activities associated with siting, constructing, operating, and decommissioning are not repeated in this section as the information is identical to that which is provided in Section II.3.1.4.

In Alternative 3, renewable energy-related activities covered by the Plan would be confined to the DFAs. Generation development would be focused on disturbed lands in the West Mojave and Eastern Slopes, and Imperial Borrego Valley ecoregion subareas, East Riverside, and around Barstow, with smaller areas in the Owens River Valley ecoregion subarea. Figure II.6-3 shows the DFAs for Alternative 3 and Appendix G provides figures of the DFAs for each ecoregion subarea in the Plan Area.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*Transmission lines shown are based on the DRECP Transmission Technical Group (TTG) Report, which provides a conceptual transmission plan for the DRECP alternatives and is not intended for siting or alignment purposes.

FIGURE II.6-3

Alternative 3 - Plan-wide DFAs

INTENTIONALLY LEFT BLANK

Table II.6-5a provides a DFA acreage summary by ecoregion subarea and by ecoregion subunit (i.e., finer-grained geographic subdivisions within each ecoregion subarea). Figure II.6-3 shows the corresponding ecoregion subunits.

Table II.6-5a
Alternative 3 Development Focus Areas by Ecoregion Subarea and Subunit

Ecoregion Subarea	Ecoregion Subunit	DFA Acreage
Cadiz Valley and Chocolate Mountains	Cadiz - 1	—
	Cadiz - 2	133,000
	Cadiz - 3	500
Imperial Borrego Valley	Imperial - 1	230,000
	Imperial - 2	261,000
	Imperial - 3	7,000
Mojave and Silurian Valley	Mojave - 1	42,000
	Mojave - 2	500
Owens River Valley	Owens -1	22,000
Panamint Death Valley	Panamint - 1	32,000
Pinto Lucerne Valley and Eastern Slopes	Pinto - 1	126,000
	Pinto - 2	—
Piute Valley and Sacramento Mountains	Piute - 1	—
Providence and Bullion Mountains	Providence - 1	16,000
	Providence - 2	—
West Mojave and Eastern Slopes	West Mojave - 1	4,000
	West Mojave - 2	221,000
	West Mojave - 3	30
	West Mojave - 4	159,000
	West Mojave - 5	128,000
	West Mojave - 6	24,000
	Total DFA Acreage	**1,405,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

The distribution of different generation technologies varies depending on underlying factors that affect each technology. The method used to estimate the distribution of generation impacts across the Plan Area simultaneously accounts for the area available to each technology, potential interactions between technologies, and variation in the relative development potential of different DFAs. A more detailed description of the methodology is

discussed in Chapter I.3 with additional detail provided in Appendix F. In the following section, each technology is discussed separately.

Table II.6-5b includes a summary of the DFAs by technology type by county. The technology type listed indicates what technologies are assumed feasible in the DFA. If multiple technologies are listed that indicates that more than one renewable energy technology could be feasible in that DFA. DFAs suitable for solar only are the most common in most counties. DFAs suitable for solar and geothermal together make up the largest technology type in Imperial County and solar and wind together make up the largest technology type category in San Bernardino County. Geothermal is only proposed in Imperial, Inyo, and San Bernardino counties under Alternative 3. Table II.6-5c includes a summary of the DFAs by ownership. For Alternative 3, over 83% of the DFAs are on nonfederal lands and nearly 17% of the DFAs are on federal lands.

Table II.6-5b
Alternative 3 Development Focus Areas by Technology Type by County

Technology Type Category by County	DFA Acreage
Imperial County	498,000
Geothermal	114,000
Solar	145,000
Solar and geothermal	226,000
Solar and wind	7,000
Solar, wind, and geothermal	5,000
Wind	90
Wind and geothermal	40
Inyo County	24,000
Geothermal	8,000
Solar	10,000
Solar and geothermal	6,000
Kern County	225,000
Solar	144,000
Solar and wind	75,000
Wind	6,000
Los Angeles County	159,000
Solar	91,000
Solar and wind	57,000
Wind	12,000
Riverside County	133,000
Solar	88,000

Table II.6-5b
Alternative 3 Development Focus Areas by Technology Type by County

Technology Type Category by County	DFA Acreage
Solar and wind	45,000
Wind	400
San Bernardino County	366,000
Geothermal	500
Solar	144,000
Solar and wind	187,000
Wind	35,000
San Diego County	—
Total	**1,405,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.6-5c
Alternative 3 Development Focus Areas by Ownership Class

Ownership Class	DFA Acreage
Federal Lands	
BLM-administered land	211,000
Other federal land	20,000
Nonfederal Lands	
Private land	1,113,000
State and local public land	62,000
Total	**1,405,000**

Note: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

The following sections contain a description of the distribution of the DFAs with an estimate of the total project area required for each technology and the associated area of permanent disturbance, a summary of which is provided in Table II.6-6. The estimated distribution of Covered Activities in the following sections aims to ensure that the DRECP evaluates a plausible magnitude of effects for each covered biological resource, such that the Plan would offer adequate minimization and mitigation for each covered technology.

Table II.6-6
Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies Under Alternative 3

	Estimated Permanent Disturbance (Acres)	Total Project Area (Acres)
Solar	113,000	113,000
Wind	5,000	79,000
Geothermal	17,000	17,000
Distributed generation	16,000	16,000
Total	**150,000**	**224,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.6.1.4.1 Solar Energy Generation (Including Utility-Scale Distributed Generation)[1]

This section provides an estimate of the size of impacts for Covered Activities associated with solar and utility-scale distributed generation projects that would be covered by the Plan under Alternative 3. Construction and operational activities are identical to those described in Section II.3.1.4.1 and listed in Table II.3-21 (Preferred Alternative). Although the area available to solar generation would be more extensive in the DFAs than for other technologies, not all DFAs were considered suitable for solar development. Consequently, it was assumed that solar development would occur within the subset of DFAs identified in Appendix G.

Solar projects can range from small-scale developments of a few megawatts (MWs) that occupy tens of acres up to 1,000 MW projects that occupy thousands of acres. Given the programmatic nature of the DRECP, extensive detailed analysis of effects that are project specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the acreage that would be affected by Covered Activities within different ecoregion subareas of the Plan Area. For the purpose of assessing the magnitude of impacts from ancillary facilities, construction impacts and infrastructure, solar projects were assumed to be a mixture of 100 MW projects and 400 MW projects to represent the diversity of projects currently under review and construction. Similarly all ground-mounted distributed generation projects were assumed to be 20 MW projects.

1 For the purpose of analysis, all distributed generation was considered to be located in the same areas as utility-scale solar, therefore requiring the same ancillary facilities (i.e., Covered Activities) as utility-scale solar projects.

When estimating the impacts of solar projects it was assumed that the construction of projects would result in the loss of all habitat within the boundary of the project footprint. Two reasons are given for this: (1) Unlike other technologies, solar projects are generally fenced to exclude wildlife and result in modification to natural processes for the life of the project; and (2) although some vegetation may be preserved at some project locations, this is not universal and conditions of service often lead to the removal of vegetation to reduce fire risk. Further, the extensive removal, modification, and grading within the project boundary, even if vegetation is not completely removed, may lead to edge effects that effectively modify the remaining vegetation communities. Therefore, the acreage requirements for roads, operation and maintenance facilities, and switchyards required for each facility are included in the overall estimated boundary of the solar project. Similarly, short-term impacts, such as construction and laydown yards, were assumed to be within the final boundary of the project and therefore subsumed within the boundary estimate. Table II.6-7 summarizes the long-term impacts for solar technologies, and provides the following information by ecoregion subarea:

- Total Long-Term Ground Disturbance Impacts – Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of all potential solar generation facility footprints, including operations and maintenance building, switchyards, and road construction impacts. All ancillary facilities were assumed to be within the boundary of the Plan Area and result in total permanent disturbance to the entire project site. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.
- Total Project Area – An estimate of the total area occupied by a given project. For area-intensive technologies like solar generation, the total project area is identical to the total permanent ground-conversion impacts.

Table II.6-7
Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 3

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	21,000	8,000	12,000
Imperial Borrego Valley	45,000	11,000	33,000
Kingston and Funeral Mountains	—	—	—
Mojave and Silurian Valley	4,000	600	3,000
Owens River Valley	2,000	1,000	1,000
Panamint Death Valley	2,000	1,000	400

Table II.6-7
Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 3

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Pinto Lucerne Valley and Eastern Slopes	12,000	3,000	9,000
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	2,000	1,000	1,000
West Mojave and Eastern Slopes	41,000	4,000	37,000
Total	**129,000**	**29,000**	**98,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

II.6.1.4.2 Wind Energy Generation

This section provides an estimate of the size of impacts for activities associated with wind projects that would be covered by the DRECP. Construction and operational activities are identical to those described in Section II.3.1.4.2 and listed in Table II.3-23 of the Preferred Alternative.

The area available to wind development was constrained by several factors, including areas where construction was considered infeasible and areas where turbine construction has been precluded by ordinance or general policy. Consequently, it was assumed that wind development would occur within the subset of DFAs identified in Appendix G.

Wind projects can range from small-scale developments of a few MWs that occupy tens of acres up to several hundred MW projects that occupy thousands of acres. Given the programmatic nature of the DRECP, extensive detailed analysis of effects that are project specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the acreage that would be affected by Covered Activities within different ecoregion subareas of the Plan.

Wind projects result in a relatively diffuse impacts spread across a wide area. Turbines are widely spaced and connected by permanent access roads and transmission infrastructure, with a centralized maintenance facilities and switchyards. Unlike solar, not all the land within the boundary of a wind project was assumed to be permanently disturbed by project activities. For the purpose of analysis, estimates of disturbed acreage were the sum of the estimated acreage required for turbine pads, roads, ancillary facilities, and supporting infrastructure. Short-term construction activities, such as

laydown yards, were assumed to result in permanent disturbance within the project boundary, and were also included in the estimate of permanently disturbed acreage. In addition to estimates of ground disturbance, the area likely to be impacted by the operation of the turbine rotors (airspace) was also estimated. For analysis purposes turbines were grouped into conceptual projects of up to 200 MWs to enable an estimation of impacts from ancillary facilities, roads, turbines, etc. Table II.6-8 summarizes the long-term impacts for wind technologies, and provides the following information by ecoregion subarea:

- Total Project Area – An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area (e.g., wind energy generation), the permanent impacts are distributed over a larger area.
- Estimated Long-Term Ground Disturbance – Estimated total acreage affected by Covered Activities. This is effectively a summation of all potential wind generation facility footprints, including individual turbine pad, operations and maintenance building, switchyard, and road construction impacts. This estimate also includes the additional impacts that would occur as a consequence of construction activities, including construction areas, laydown yards, and storage facilities. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.
- Turbine Rotor Swept Area – An estimate of the total aerial acreage affected by the rotation of turbine blades while a wind facility is operating.

Table II.6-8
Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subarea – Alternative 3

Ecoregion Subarea	Project Area (acres)			Long-Term Disturbance (acres)			Rotor Swept Area (acres)		
	Plan-Wide	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	11,000	6,000	5,000	600	300	300	300	200	200
Imperial Borrego Valley	1,000	400	1,000	200	100	100	—	—	—
Kingston and Funeral Mountains	—	—	—	—	—	—	—	—	—

Table II.6-8
Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subarea – Alternative 3

Ecoregion Subarea	Project Area (acres)			Long-Term Disturbance (acres)			Rotor Swept Area (acres)		
	Plan-Wide	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*
Mojave and Silurian Valley	—	—	—	—	—	—	—	—	—
Owens River Valley	—	—	—	—	—	—	—	—	—
Panamint Death Valley	—	—	—	0	—	—	—	—	—
Pinto Lucerne Valley and Eastern Slopes	26,000	6,000	20,000	1,000	300	1,000	800	200	600
Piute Valley, Sacramento Mountains	—	—	—	—	—	—	—	—	—
Providence and Bullion Mountains	—	—	—	—	—	—	—	—	—
West Mojave and Eastern Slopes	40,000	1,000	39,000	2,000	100	2,000	1,000	—	1,000
Grand Total	**78,000**	**13,000**	**65,000**	**5,000**	**900**	**4,000**	**2,000**	**400**	**2,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.6.1.4.3 Geothermal Energy Generation

This section provides an estimate of the size of impacts for Covered Activities associated with geothermal projects that would be covered by the DRECP. Construction and operational activities are identical to those described in Section II.3.1.4.3 and listed in Table II.3-25 of the Preferred Alternative.

The area available to geothermal development was limited to area in the Imperial Borrego Valley and part of the Owens River Valley ecoregion subareas, where geothermal resources are concentrated. Consequently, it was assumed that geothermal development would occur within the subset of DFAs identified in Appendix G.

Geothermal projects would be more limited in size (in the Plan Area) than other renewable energy projects. Recent projects vary from about 50 MW to 160 MW in size. For analysis within the DRECP, geothermal projects were assumed be typically 50 MW in size. Given the programmatic nature of the DRECP, extensive detailed analysis of effects that are project specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the estimated acreage that would be affected by Covered Activities within different ecoregion subareas of the Plan.

Geothermal projects result in extensive impacts associated with the power block and ancillary facilities, with more dispersed impacts resulting from the well-fields. Well heads that inject and collect heat transfer fluids, are widely spaced and connected by permanent access roads and pipelines to the centrally located power block and steam turbine facilities. All the land within the boundary of a geothermal project was assumed to be permanently disturbed by project activities. Estimates of disturbed acreage include the acreage required for well head pads, roads, ancillary facilities, and supporting infrastructure, and also includes the land fragmented by the roads, pipelines, and well pads in the well-field, which was assumed to retain no conservation value. Short-term construction activities, such as laydown yards, were assumed to result in permanent disturbance within the project boundary, and are also included in the estimate of permanently disturbed acreage. Table II.6-9 summarizes the long-term impacts for geothermal technologies, and provides the following information by ecoregion subarea:

- Estimated Long-Term Disturbance – Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of all potential geothermal energy generation facility footprints, including operations and maintenance building, switchyard, and road construction impacts. This estimate also includes the additional impacts that occur as consequence of construction activities, and the fragmented land within the well-field.. Due to the difficulty of restoration in an arid environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.
- Total Project Area – An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area (e.g., geothermal energy generation), the permanent impacts are distributed over a larger area.

Table II.6-9
Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Alternative 3

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	—	—	—
Imperial Borrego Valley	16,000	6,000	10,000
Kingston and Funeral Mountains	—	—	—
Mojave and Silurian Valley	—	—	—
Owens River Valley	1,000	1,000	—
Panamint Death Valley	—	—	—
Pinto Lucerne Valley and Eastern Slopes	—	—	—
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	—	—	—
West Mojave and Eastern Slopes	—	—	—
Total	**17,000**	**7,000**	**10,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.6.1.4.4 Transmission

The transmission Covered Activities components for Alternative 3 would be the same as those described for the Preferred Alternative in Section II.3.1.4.4.

The ecoregion subarea distribution of major transmission, substation, and gen-tie impacts described in Table II.6-10 provides an estimate of right-of-way (ROW) requirements in acres from which it was possible to estimate the relative impacts of transmission-related Covered Activities described in Section II.3.1.4.4.

- Estimated Permanent Ground Disturbance – Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of transmission impacts. This estimate also includes impacts that occur as a consequence of construction activities, including construction areas, laydown yards, and storage facilities. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.
- Total Project Area – An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area, the permanent impacts are distributed over a larger area.

Table II.6-10
Right-of-Way Requirements for Transmission Associated with Renewable Energy Development by Ecoregion Subarea – Alternative 3

	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	8,000	5,000	3,000
Imperial Borrego Valley	14,000	3,000	10,000
Kingston and Funeral Mountains	—	—	—
Mojave and Silurian Valley	1,000	500	400
Owens River Valley	800	500	400
Panamint Death Valley	500	500	—
Pinto Lucerne Valley and Eastern Slopes	5,000	2,000	3,000
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	700	400	300
West Mojave and Eastern Slopes	2,000	400	2,000
Total	**32,000**	**12,000**	**19,000**

Notes: All transmission disturbance data reflect intermediate disturbance values used for comparative purposes in the analysis. Disturbance area estimates reflecting the most recent Transmission Technical Group Report are provided in Appendix K. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

II.6.1.4.4.1 Transmission Outside the Plan Area

Transmission outside the Plan Area is not a Covered Activity under the DRECP. The potential direct effects of potential future transmission outside the Plan Area associated with development of covered renewable energy projects and transmission facilities inside the Plan Area are, however, programmatically described and analyzed in Volume IV of the DRECP for each environmental resource category. This section presents a description of the transmission facilities outside the Plan Area that are programmatically analyzed in Volume IV.

The assumptions used to calculate acreages of effects for transmission and substation facilities inside the Plan Area are the same as those used to calculate effects of transmission and substations outside the Plan Area, and are described in Section II.3.1.4.4. However, approval of the DRECP would not result in any approval of the potential future transmission lines outside the Plan Area that are discussed here. All future transmission lines outside the Plan Area would require new applications by the developer or utility, compliance with CEQA and NEPA as appropriate, and approvals from the developer (if municipal utilities or

irrigation districts) or from California Public Utilities Commission (if investor-owned utilities) prior to construction.

Table II.6-11 provides the acreage of effects for transmission and substations outside of the DRECP boundary. For ease of analysis, the transmission lines and substations have been clustered into general geographic boundaries.

Table II.6-11
Right-of-Way Requirements for Transmission Outside the Plan Area Associated with Renewable Energy Development – Alternative 3

Geographic Area	Transmission	
	Acres	*Miles*
San Diego area	2,000	94
Los Angeles area	2,000	83
Central Valley	16,000	274
Rialto/Moreno Valley/Devers area	12,000	484
Total Outside Plan Area	32,000	935

Source: Transmission Technical Group Report, provided as Appendix K.

The new transmission lines outside the Plan Area are presented in the following list.

- **San Diego Area:** Two 500-kilovolt (kV) lines from the Imperial Valley Substation to the existing Sycamore Substation (San Diego).
- **Los Angeles Area:**
  - One 500 kV line from the existing Vincent Substation (just inside the DRECP boundary) to the existing Lighthipe Substation.
  - One 500 kV from the existing Vincent Substation (just inside the DRECP boundary) to the existing Mesa Substation
- **Central Valley:** Two 500 kV lines from the PG&E Midway Substation to the Tesla/Tracy Substation.
- **Rialto/Moreno Valley/Devers Area:**
  - One 500 kV line from the Devers Substation to Vincent Substation
  - One 500 kV line from the Devers Substation to Rancho Vista Substation
  - One 500 kV line from Colorado River Substation to existing Valley Substation. About 103 miles of this line would be outside the DRECP boundary.
  - Three 500 kV lines from Midway X (Imperial Valley) to Devers Substation. About 200 miles of this corridor would be outside the DRECP boundary.

II.6.1.5 Plan Implementation

Plan implementation for Alternative 3 would be the same as that for the Preferred Alternative as described in Section II.3.1.5.

II.6.2 BLM LUPA Elements of Alternative 3

The BLM LUPA elements of Alternative 3 are the same elements as the Preferred Alternative (see Figure II.6-4).

As shown in Table II.6-12, approximately 9,834,000 acres within the Plan Area occur within the BLM LUPA on BLM-administered lands. Under Alternative 3, approximately 211,000 acres of DFAs occur on BLM-administered lands.

In this area, existing conservation on BLM lands totals 3,264,000 acres including 3,260,000 acres of LLPAs. All of the BLM LLPAs are Wilderness or Wilderness Study Area and are managed to meet the statute of the Wilderness Act of 1964 and to ensure these congressionally designated areas meet DRECP conservation goals.

As shown in Table II.6-13, of the 5,023,000 acres of BLM LUPA conservation designations, 1,630,000 acres (32%) would be designated as Existing or Proposed ACEC, 3,108,000 acres (62%) would be Existing or Proposed ACEC and National Conservation Lands, 272,000 acres (5%) would be National Conservation Lands only, and 13,000 acres (less than 1%) would be Wildlife Allocation.

Table II.6-12
Interagency Alternative 3 Within the BLM LUPA

Alternative Components	Acreage[1]
DFAs	**211,000**
Study Area Lands	2,000
Future Assessment Areas	2,000
DRECP Plan-wide Reserve Design Envelope	**8,287,000**
Existing conservation areas	3,264,000
BLM LUPA conservation designations	5,023,000
Urban Areas, Other Lands, and Undesignated Areas	1,334,000
Impervious and Urban Built-up Land	58,000
BLM Open OHV Areas	235,000
Imperial Sand Dunes, including the BLM Open OHV Area	127,000
Undesignated Areas	860,000
Total	**9,834,000**

Notes: BLM LUPA conservation designations include NLCS lands, ACECs, and Wildlife Allocations. Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the Existing Conservation Area acreages. The

BLM LUPA would also designate approximately 2,531,000 acres of Special Recreation Management Areas (SRMAs) on BLM-administered lands in addition to the 193,000 acres of existing SRMAs on BLM-administered lands, which are BLM designation overlays that overlap portions of the components provided in this table. Impervious and urban built-up lands occur within BLM LUPA conservation designations and DFAs where not explicitly included in the urban category reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[1] Acreages reported are on BLM-administered lands only within the BLM LUPA area..

Table II.6-13
Alternative 3 BLM LUPA Conservation Designations Within the BLM LUPA

BLM LUPA Conservation Designation	Acreage1,2
NLCS	272,000
NLCS (and Existing ACEC)	1,620,000
NLCS (and Proposed ACEC)	1,488,000
Existing ACEC	397,000
Proposed ACEC	1,233,000
Wildlife Allocation	13,000
Total	**5,023,000**

Notes:

[1] Acreages reported are on BLM-administered lands only within the DRECP LUPA area.

[2] Approximately 824,000 acres of BLM LUPA conservation designations on BLM-administered lands occur within existing conservation areas. These overlapping acres are not reported in this table.

In addition to the proposed BLM LUPA conservation designations, Alternative 3 includes proposed BLM LUPA Special Recreation Management Areas (SRMAs) as shown in Table II.6-14. Unlike the Preferred Alternative, Alternative 3 would not designate any Extensive Recreation Management Areas (ERMA).

Table II.6-14
Alternative 3 Special Recreation Management Areas and Extensive Recreation Management Areas Within the BLM LUPA

SRMA/ERMA	Total Acreage[1]
Existing SRMA	193,000
Proposed SRMA	2,531,000
Proposed ERMA	-
Total	**2,724,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[1] Acreages reported are on BLM-administered lands only within the BLM LUPA area.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.6-4

Alternative 3 - BLM LUPA

INTENTIONALLY LEFT BLANK

The proposed BLM LUPA would not modify existing energy corridors, including "corridors of concern" defined in the Section 368 Energy Corridors settlement agreement described in Section I.2.1.7.7.

II.6.2.1 BLM Renewable Energy Policies

The BLM Renewable Energy Policies would be the same as in the Preferred Alternative.

II.6.2.2 BLM Conservation Areas

II.6.2.2.1 National Conservation Lands

This alternative emphasizes only the larger landscape connecting corridors. It does not include smaller cultural and botanic areas that are not components of a larger landscape. The use allocations reflect the scientific uncertainty of the overall alternative and so are more limiting on the allowable uses than all of the alternatives except Alternative 2. This alternative would include existing transmission corridors.

This alternative would designate 3,418,000 acres as components of the National Conservation Lands on BLM-administered lands, which includes 824,000 acres within existing conservation areas (LLPAs and MEMLs) and 2,594,000 acres as part of the BLM LUPA conservation designations.

II.6.2.2.1.1 Management of National Conservation Lands

1. **Planning Area-Wide National Conservation Land Management Direction**

   Like the Preferred Alternative, the use allocations for the National Conservation Lands in the California Desert Conservation Area (CDCA) are the allowable uses that would apply to all National Conservation Lands within the CDCA. The use allocations for the Preferred Alternative are listed below. For resources where there are no specific use allocations for National Conservation Lands, Plan-wide rules would apply unless otherwise specified in the Special Unit Management Plans (Appendix L).

   - **Comprehensive Trails and Travel Management.** National Conservation Lands would be designated in accordance to the appropriate Trails and Travel Management Plan (TTMP)/Resource Management Plan (RMP) future travel management planning will put the emphasis of travel allowed on designated routes that provide for enjoyment of values, or necessary administrative access to conserve, protect, and restore area values.
   - **Cultural Resources.** Any adverse effects to historic properties resulting from allowable uses will be addressed through the Section 106 process of the National Historic Preservation Act and the implementing regulations at 36 Code of

Federal Regulations (CFR) Part 800. Resolution of adverse effects will in part be addressed via alternative mitigation that includes regional synthesis and interpretation of existing archaeological data in addition to mitigation measures determined through the Section 106 consultation process.

- **Lands and Realty**
  - **Rights-of-Way**
    - **Sites Authorizations.** National Conservation Lands would be considered exclusion areas. Exceptions would only be considered where they clearly do not impact National Conservation Lands values. Site authorizations that protect or enhance conservation values, such as those granted as compensatory mitigation for Covered Activities within DFAs or for habitat restoration, would be allowed.
    - **Renewable Energy Generation.** National Conservation Lands would be exclusion areas for renewable energy ROWs.
    - **Linear ROWs.** Transmission would only be permitted in existing transmission corridors. National Conservation Lands would be avoidance areas for all other linear ROWs.
  - **Land Tenure**
    - Exchange, purchase, or donation would be permitted to acquire non-BLM lands within the National Conservation Lands unit. Disposal of National Conservation Lands would not be permitted.
    - National Conservation Lands inholdings would be a priority for acquisition from willing sellers. All inholdings would become part of the National Conservation Lands unit upon acquisition and be subject to associated management requirements.
- **Minerals**
  - **Locatable Minerals**
    - For the purposes of locatable minerals, National Conservation Lands would be treated as "controlled" or "limited" use areas in the CDCA, requiring a Plan of Operations for greater than casual use under 43 CFR 3809.11.
    - The BLM would develop priority list of National Conservation Land units for potential withdrawal.
    - Initiate segregation of one subregion annually and complete mineral withdrawal review process (within 2-year time frame for each subregion).

- **Saleable Minerals.** Saleable mineral development would be limited to approval on BLM parcels under 2,000 acres. Mitigation/compensation must result in net benefit to National Conservation Lands values.
- **Leasable Minerals**
  - National Conservation Lands would be unsuitable for all leasing.
  - The BLM would review National Conservation Land values and undertake additional planning to determine if no surface occupancy leasing can be permitted in specific instances

- **Recreation and Visitor Services.** The BLM would not permit Competitive Special Recreation Permits. Commercial Special Recreation Permits would be limited to those uses that allow for enjoyment of National Conservation Lands values.
- **Water Resources.** Applications for water rights would be decided on a case-by-case basis to protect water dependent National Conservation Lands values.
- **Disturbance Caps.**[2] Development in National Conservation Lands would be limited to 0.25% percent of total authorized disturbance.

2. National Conservation Land Subareas — Description of Values to be Protected

The values protected in the National Conservation Lands are described below. Alternative 3 emphasizes habitat connectivity and ecological and scientific values for areas included as National Conservation Lands.

3. Area-Specific National Conservation Land and Area of Critical Environmental Concern Management Prescriptions

Similar to the Preferred Alternative, there is overlap with the ACEC designations, and management for individual units is described in the Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L.

[2] Disturbance caps only apply to lands not already included under ACECs or Wildlife Allocation disturbance caps, as described in the Special Unit Management Plans in Appendix L.

II.6.2.2.1.2 Subarea Descriptions

Basin and Range

Ecological Values

Ecological values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include nearly all of the ecological values described for the Preferred Alternative.
- The flora and fauna of Eureka and Fish Lake valleys, including the Joshua trees (*Yucca brevifolia*) of Fish Lake Valley at the northernmost extent of their range, and the black toad (*Bufo exsul*) habitat in Deep Springs Valley would not be included.

Cultural Values

Cultural values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include nearly all of the cultural values described for the Preferred Alternative.
- The archaeological resources of Fish Lake, Deep Springs, and Eureka valleys, including previously-identified prehistoric village complexes, lithic scatters, and rock art sites, would not be included.

Scientific Values

Scientific values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include nearly all of the scientific values described for the Preferred Alternative.
- Research opportunities and other scientific values in Fish Lake, Deep Springs, and Eureka valleys, and at the Trona Pinnacles, would not be included.

Acreage

This alternative would include approximately 335,000 acres of National Conservation Lands in the Basin and Range subarea.

Coachella Valley

Ecological Values

Ecological values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass nearly all of the ecological values described for the Preferred Alternative.
- Inclusion of the noncontiguous public lands parcels of the Willow Hole-Edom Hill Preserve adds mesquite hummocks, a fan palm oasis, Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*), Little San Bernardino Mountains linanthus (*Linanthus maculatus*), Palm Springs round-tailed ground squirrel (*Spermophilus tereticaudus chlorus*), Palm Springs pocket mouse (*Perognathus longimembris bangsi*), burrowing owl (*Athene cunicularia)*, Coachella giant sand treader cricket (*Macrobaenetes valgum*), least Bell's vireo (*Vireo belli pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-breasted chat (*Icteria virens*), yellow warbler (*Dendroica petechial*), and additional critical habitat for the Coachella Valley fringe-toed lizard (*Uma inornata*).
- The Dos Palmas Preserve, with its riparian values, endangered desert pupfish (*Cyprinodon macularius*) and Yuma clapper rail (*Rallus longirostris yumanensis*), would not be included in National Conservation Lands.

Cultural Values

Cultural values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands in this alternative would encompass most of the cultural values described for the Preferred Alternative, including numerous significant prehistoric sites, sacred sites and landscape features of importance to Cahuilla culture, and historic structures and other features from early European American settlement.
- The cultural resources of Dos Palmas Preserve, including ancient habitation sites on the shoreline of ancient Lake Cahuilla, are not included in National Conservation Lands under this alternative.

Scientific Values

Scientific values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 66,000 acres of National Conservation Lands in the Coachella Valley subarea.

Colorado Desert

Ecological Values

Ecological values of National Conservation Lands in Alternative 3 would compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the ecological values described for the Preferred Alternative.
- BLM lands in the Eagle Mountains would be added as National Conservation Lands, encompassing areas of habitat connectivity between parts of Joshua Tree National Park on its east side.
- National Conservation Lands would be added north of Interstate 10, encompassing areas of habitat connectivity between Joshua Tree National Park and Palen McCoy Wilderness, and between dune habitats at Palen Lake and Ford Lake for Mojave fringe-toed lizard (*Uma scoparia*); and including populations of additional rare plant species dependent on dunes and sandy soils: Harwood's milk-vetch (*Astragalus insularis* var. *harwoodii*) and Palmer's jackass clover (*Wislizenia refracta* ssp. *palmeri*).
- Desert riparian habitat at McCoy Wash for sensitive bird species would be added to National Conservation Lands.
- National Conservation Lands National Conservation Lands would encompass most of the areas of wildlife habitat connectivity identified in the Preferred Alternative, including segments of the BLM public lands in Cadiz Valley, Chuckwalla to Chemehuevi tortoise linkage, McCoy Valley, McCoy Wash, Mule-McCoy, and Upper McCoy. Areas in the northeast of the subarea representing habitat connectivity between Turtle Mountains, Rice Valley, Riverside Mountains, and Big Maria Mountains Wilderness are less extensive than in the Preferred Alternative.

- The habitat connectivity corridors between the Mule Mountains ACEC and the Palo Verde Mountains Wilderness, and connecting the Riverside Mountains, Big Maria Mountains, and Rice Valley Wildernesses, would not be included as National Conservation Lands.
- Underground habitat for rare bat species would be included in the southeast part of the subarea and not in the northeast.

Cultural Values

Cultural values of National Conservation Lands in Alternative 3 would compare to the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the cultural values of the Preferred Alternative.
- Iron Mountain World War II Desert Training Center would be partially included.
- Mule Mountains would not be included.

Scientific Values

Scientific values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 717,000 acres of National Conservation Lands in the Colorado Desert subarea.

Kingston–Amargosa

Ecological Values

Ecological values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass nearly all of the ecological values described for the Preferred Alternative, including all values associated with the Amargosa River.
- Some corridors important for maintaining genetic connectivity for desert tortoise (*Gopherus agassizii*) and desert bighorn sheep (*Ovis canadensis nelsoni*) are included as National Conservation Lands. These would be less extensive in the Shadow Valley Expansion area.

Cultural Values

Cultural values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands in this alternative would encompass most of the cultural values described for the Preferred Alternative.
- More cultural values associated with historic mining areas in the Silurian Valley would be included.
- Areas of cultural values would be less extensive in Shadow Valley.

Scientific Values

Scientific values of National Conservation Lands in Alternative 3 relating to ecological and cultural values correspond with those values included under this alternative, as described above.

Acreage

This alternative would include approximately 398,000 acres of National Conservation Lands in the Kingston–Amargosa subarea.

Lake Cahuilla

Ecological Values

Ecological values of National Conservation Lands in Alternative 3 would compare to those identified for the Preferred Alternative as follows:

- National Conservation Lands would include nearly all of the ecological values identified for the Preferred Alternative.
- Additional Lake Cahuilla shoreline lands, flat-tailed horned lizard (*Phrynosoma mcallii*) habitat and wildlife linkages near the Algodones Dunes at the east side of the valley would be included, while some of the habitat and linkages at the west side of the valley (Ocotillo ACEC and Lake Cahuilla ACEC Expansion) would not be included. Lake Cahuilla shoreline lands at the west side of the valley would be less extensive than in the Preferred Alternative.

Cultural Values

Cultural values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the cultural values described for the Preferred Alternative.
- National Conservation Lands would cover different portions of the Lake Cahuilla shoreline and its collection of important archaeological sites. Segments of shoreline are added at the east side of the valley, near the East Mesa and Algodones Dunes areas, while another segment at the west side of the valley (Lake Cahuilla ACEC Expansion) is not included.
- National Conservation Lands would not include archaeological sites or culturally significant features at Pilot Knob or Ocotillo.

Scientific Values

Scientific values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 431,000 acres of National Conservation Lands in the Lake Cahuilla subarea.

Mojave and Silurian Valley

Ecological Values

Ecological values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include ecological values described for the Preferred Alternative at the Ord–Rodman ACEC and Afton Canyon.
- National Conservation Lands in this alternative would include some key habitat for Mohave ground squirrel (*Xerospermophilus mohavensis*) and burrowing owl in the vicinity of Black Mountain Wilderness. It would not include other key habitats such as Coolgardie Mesa.
- Areas of habitat connectivity encompassed by National Conservation Lands are between Grass Valley and Golden Valley Wildernesses, between Rodman Mountains

Wilderness and Cady Mountains Wilderness Study Area, and between Kingston Range Wilderness and Death Valley National Park, along with some of the habitat connectivity for desert bighorn sheep, desert tortoises, and bats associated with the Silurian Valley. The Mojave National Preserve and Death Valley National Park would not be connected by BLM wildernesses and National Conservation Lands.

- National Conservation Lands would not encompass Mojave fringe-toed lizard habitat; the riparian habitat of the Salt Creek Hills; the critical habitat for desert tortoise, and other special status plant and animal habitats, of the Superior–Cronese ACEC; Lane Mountain milk-vetch (*Astragalus jaegerianus*), Barstow woolly sunflower (*Eriophyllum mohavense*) populations and other ecological values at Coolgardie Mesa; or populations of Parish's phacelia (*Phacelia parishii*) in the vicinity of Coyote Lake.

Cultural Values

Cultural values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include most of the cultural values described for the Preferred Alternative.
- Less lands around Black Mountain Wilderness and the Silurian Valley are included in National Conservation Lands. The same cultural values described for these locations in the Preferred Alternative are included.
- National Conservation Lands would not include the Manix segments of the Old Spanish National Historic Trail,[3] the historic trail and railroad segments of the Silurian Valley Corridor, or the Calico Early Man Site.

Scientific Values

Scientific values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- Scientific values associated with ecological and cultural values would differ in a manner corresponding with the differences in values described above.
- National Conservation Lands would not include the paleontological values of Rainbow Basin or the Manix area.

[3] Although not included in the National Conservation Lands designated under Public Law 111-11, the Old Spanish Historic Trail remains a part of the NLCS as a National Historic Trail. Section II.6.2.2.2 discusses the National Historic Trail Management Corridor for this alternative.

Acreage

This alternative would include approximately 177,000 acres of National Conservation Lands in the Mojave and Silurian Valley subarea.

Pinto, Lucerne Valley, and Eastern Slopes

Ecological Values

Ecological values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the ecological values described for the Preferred Alternative.
- Juniper Flats, with its coast horned lizard (*Phrynosoma coronatum*) and gray vireo (*Vireo vicinior*) habitats, is not included.

Cultural Values

Cultural values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the cultural values described for the Preferred Alternative.
- Large cultural landscapes important to Native American tribes, particularly Juniper Flats, would not be included as National Conservation Lands. These scenic resources are also considered important to the general public.

Scientific Values

Scientific values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 305,000 acres of National Conservation Lands in the Pinto, Lucerne Valley, and Eastern Slopes subarea.

Piute Valley and Sacramento Mountains

Ecological Values

Ecological values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the ecological values described for the Preferred Alternative.
- National Conservation Lands would include less extensive acreage in the Sacramento Mountains, and slightly less acreage of rare plant populations.

Cultural Values

Cultural values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the cultural values described for the Preferred Alternative.
- Cultural resources in the Sacramento Mountains would be included in National Conservation Lands. These would be less extensive than in the Preferred Alternative.

Scientific Values

Scientific values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 391,000 acres of National Conservation Lands in the Piute Valley and Sacramento Mountains subarea.

South Mojave–Amboy

Ecological Values

Ecological values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the ecological values described for the Preferred Alternative.

- The Dale Lake habitat for Mojave fringe-toed lizard, and the area around Dale Lake connecting Cleghorn Lakes Wilderness, Sheephole Valley Wilderness, and the Pinto Mountain ACEC, would be added to National Conservation Lands in this alternative.
- National Conservation Lands would also encompass nearly all of the areas of wildlife habitat connectivity that are included in the Preferred Alternative. Areas included would be less extensive between the Marble Mountains and Tribolite Wilderness to the south and the Mojave National Preserve on the north.

Cultural Values

Cultural values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the cultural values described for the Preferred Alternative.
- Slightly less area of the proposed Mojave Trails National Monument and of the historic Tonopah and Tidewater, and Atchinson, Topeka and Santa Fe railroads would be included in National Conservation Lands.

Scientific Values

Scientific values would compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological values described above. As an example, there would be more opportunities on National Conservation Lands to study habitat improvements for Mojave fringe-toed lizards in the Dale Lake area.

Acreage

This alternative would include 584,000 acres of National Conservation Lands in the South Mojave-Amboy subarea.

Western Desert and Eastern Slope

Ecological Values

Ecological values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include most of the ecological values described for the Preferred Alternative.

- National Conservation Lands would include the following, with less extensive areas than in the Preferred Alternative: habitat linkages between El Paso Mountains Wilderness and Kiavah Wilderness; the migratory bird flyway at the north end of the subarea along the eastern flank of the Sierra Nevada; and the eastern El Paso region, with its important habitat for the Golden Eagle and other raptors.

Cultural Values

Cultural values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the cultural values described for the Preferred Alternative.
- National Conservation Lands would include the following, with less extensive areas than in the Preferred Alternative: the Last Chance Canyon National Register Archaeological District (a small portion would not be included) and lands on the southwest side of the Black Mountain Wilderness.

Scientific Values

Scientific values of National Conservation Lands in Alternative 3 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 193,000 acres of National Conservation Lands in the Western Desert and Eastern Slopes subarea.

II.6.2.2.2 National Trails

II.6.2.2.2.1 National Scenic and Historic Trails

Goals and Objectives

Goals and objectives for National Scenic and Historic Trails (NSHT) would be the same as the Preferred Alternative.

Conservation and Management Actions for the Pacific Crest National Scenic Trail, and the Juan Bautista de Anza and Old Spanish National Historic Trails Management Corridors

- **Management Corridor Width.** Establish a National Trail Management Corridor, width generally 5 miles from centerline for the Pacific Crest Trail, and for high potential route segments and other known historically significant segments on the National Historic trails. Additional segments of the NSHTs may be added to the management corridor as information becomes available on their qualifications as high potential route segments.
- **Management of Trail Corridors.** Manage National Trails as components of the BLM's National Landscape Conservation System. Where National Trails overlap other National Conservation Lands, the more protective CMAs or land use allocations will apply. Within these areas, the BLM will support the nature and purposes of the designated National Trails.
- **Lands and Realty**
  - Rights-of-Way
    - **Site Authorizations.** NSHT Management Corridors would be exclusion areas.
    - **Linear ROWs.** NSHT Management Corridors would be exclusion areas, except in designated transmission corridors. Exclude cultural landscapes, high potential historic sites, and high potential route segments identified along national historic trails corridors from transmission except in approved transmission corridors. Where development affects national trail management corridors, an analysis must be performed to ensure that the development does not substantially interfere with the nature and purposes of the trail, and that mitigation/compensation results in a net benefit to the trail.
    - **Renewable Energy ROWs**. Exclude cultural landscapes, high potential historic sites, and high potential route segments identified along national historic trails corridors from transmission except in approved DFAs. Where development affects national scenic and historic trail management corridors, an analysis must be performed to ensure that the development does not substantially interfere with the nature and purposes of the trail, and that mitigation/compensation results in a net benefit to the trail.
  - **Land Tenure.** Exchange, purchase, or donation of lands in NSHT Management Corridors would be allowed. Disposal of lands in NSHT Management Corridors would not be permitted.

- Minerals
  - **Locatable Minerals.** The BLM would propose NSHT Management Corridors for withdrawal from mineral entry. Withdrawals would be subject to valid existing rights.
  - **Saleable Minerals.** Saleable mineral development in NSHT Management Corridors would be limited to use on local public works projects. Mitigation/compensation must result in net benefit to NSHT values.
  - **Leasable Minerals.** NSHT Management Corridors would be unsuitable for all leasing.
- **Recreation.** Competitive Special Recreation Permits would not be permitted. Commercial Special Recreation Permits would be limited to those uses that provide for enjoyment/appreciation of NSHT resources, qualities, values, and associated settings and the primary use or uses.
- **Cultural Resources:** Any adverse effects to historic properties resulting from allowable uses will be addressed through the Section 106 process of the National Historic Preservation Act and the implementing regulations at 36 CFR Part 800.

II.6.2.2.2.2 National Recreation Trails

Management for National Recreation Trails would be the same as under the Preferred Alternative.

II.6.2.2.3 Areas of Critical Environmental Concern

Alternative 3 would include 124 ACECs totaling approximately 5,550,000 acres (nonoverlapping ACEC acres) on BLM-administered lands (includes ACECs within Existing Protected Areas). Specific management and maps for ACECs under this alternative are included in the Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L.

II.6.2.2.4 Wildlife Allocations

This alternative would include 13,000 acres of Wildlife Allocations on BLM-administered lands. Descriptions and maps are included in the Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L.

II.6.2.2.5 Special Recreation Management Areas

This alternative would include 28 SRMAs (2,724,000 acres on BLM-administered lands). Descriptions, maps, and management actions for each SRMA under this alternative are included in SRMA Management Plans in Appendix L.

II.6.2.2.6 Lands Managed to Protect Wilderness Characteristics

Under Alternative 3, all acreage that was inventoried and found to have wilderness characteristics, except those lands located within DFAs and transmission corridors, would be managed to protect these characteristics (see Figure II.6-5). In summary, of the 633,000 acres found to have wilderness characteristics, 374,000 acres would be managed to protect those wilderness characteristics.

II.6.2.3 BLM-Specific CMAs

The following CMAs are different than the Preferred Alternative. For all other resources, see the Preferred Alternative, Section II.3.2.3.

II.6.2.3.1 Lands and Realty

Conservation and Management Actions for Lands and Realty would be the same as in the Preferred Alternative, except for Land Exchanges and Land Sales, as described below.

II.6.2.3.1.1 CMAs for the Entire Planning Area

- In nondesignated lands (i.e., lands not covered by the specific CMAs below), make lands available for disposal through exchange or land sale.

II.6.2.3.1.2 Conservation and Management Actions in Development Focus Areas and DRECP Study Areas

- Make lands within DFAs available for disposal by sale or exchange under Section 203(a)(1), 203(a)(3), 206, and 209 of the Federal Land Policy and Management Act.
- In DRECP Study Areas, acquire lands through exchange, purchase, or donation.
- In DRECP Study Areas, make lands unavailable for disposal.

II.6.2.3.1.3 CMAs in National Conservation Lands

- Make available for exchange, purchase, or donation in accordance with the CMAs outlined for National Conservation Lands in Section II.3.2.2.1.1.
- Make lands in National Conservation Lands unavailable for disposal.

II.6.2.3.1.4 CMAs in Areas of Critical Environmental Concern

- Acquire lands in ACECs through exchange, purchase, or donation.
- Make lands in ACECs unavailable for disposal.

Conservation and Management Actions in Wildlife Allocations

- Acquire lands in Wildlife Allocations through exchange, purchase, or donation.
- Make lands in Wildlife Allocations unavailable for disposal.

Conservation and Management Actions in Special Recreation Management Areas

- Acquire lands in SRMAs through exchange, purchase, or donation.
- Make lands in SRMAs unavailable for disposal.

Conservation and Management Actions in Lands Managed to Protect Wilderness Characteristics

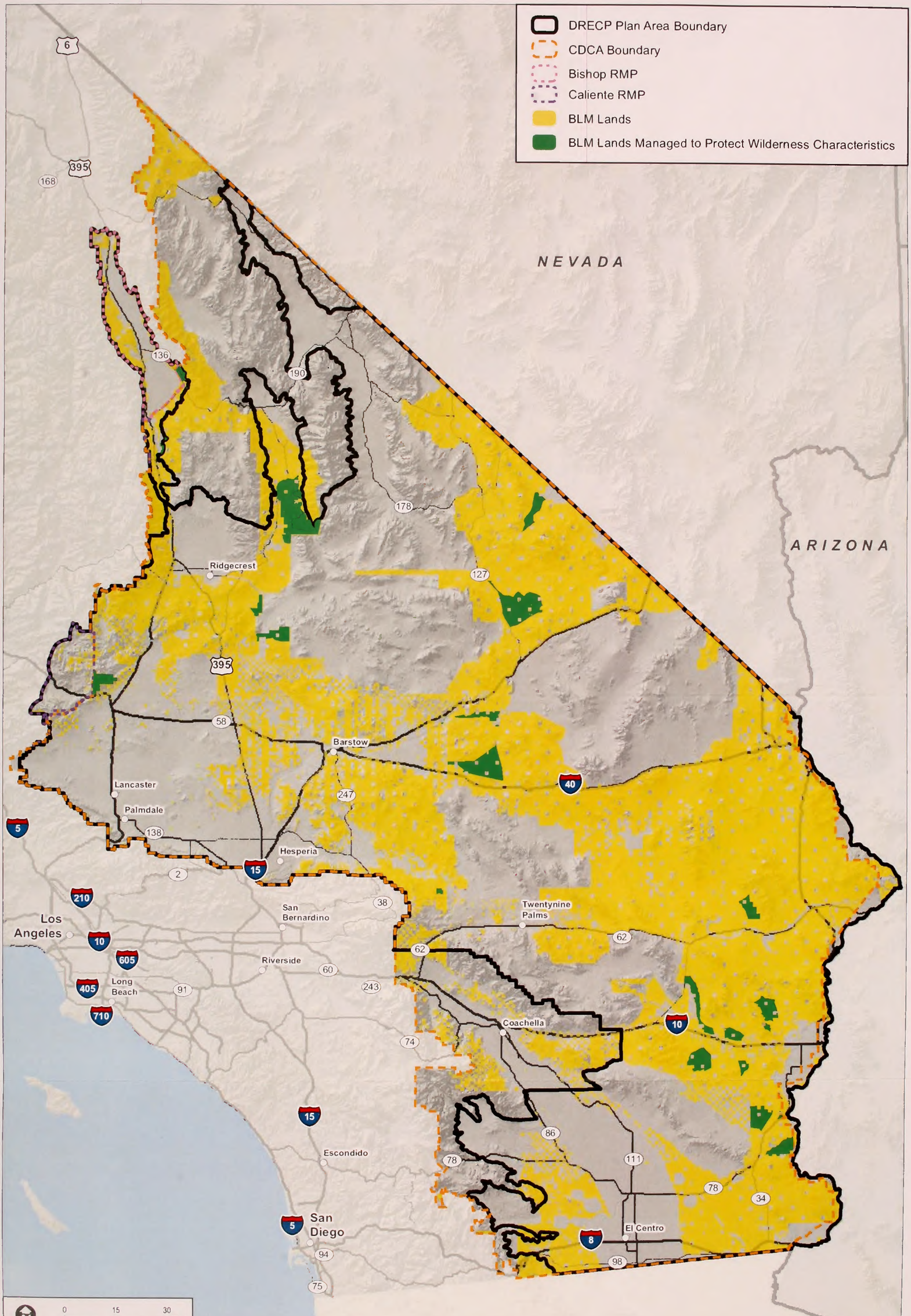
- Acquire lands in lands managed to protect wilderness characteristics through exchange, purchase, or donation.
- Make lands in lands managed to protect wilderness characteristics unavailable for disposal.

II.6.2.3.2 Soil, Water, and Water-Dependent Resources

CMAs for soil, water, and water-dependent resources would be the same as in the preferred, except within DFAs, as described below.

II.6.2.3.2.1 CMAs in Development Focus Areas

- Limit disturbance of sensitive soil areas, so that no more than 1% of the sensitive soil areas within a proposed project footprint shall be disturbed for construction.
- Exclude renewable energy development in sand dunes areas.
- Limit disturbance of sand flow corridors, so that no more than 1% of the sand flow corridors within a proposed project footprint shall be disturbed for construction.
- Limit disturbance of desert pavement, so that no more than 5% of the desert pavement within a proposed project footprint shall be disturbed for construction.
- Avoid development in flood plain, unless such development can be mitigated.
- Apply a 0.25-mile protective offset around playas.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.6-5

Alternative 3 - BLM Lands Managed to Protect Wilderness Characteristics

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_II\figII.6-5.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

II.6.2.3.3 Visual Resources Management

Figure II.6-6 shows Visual Resources Management (VRM) Classes under this alternative. CMAs under this alternative would be the same as under the Preferred Alternative.

II.6.2.3.4 Wilderness Characteristics

In addition to the CMAs listed in the Preferred Alternative, all lands identified for management to protect wilderness characteristics in Figure II.6-5 are closed to all mechanized and motorized transport.

II.6.2.4 CDCA Plan Amendments

II.6.2.4.1 Multiple-Use Classes

The amendments to the multiple-use classes would be the same as the Preferred Alternative.

II.6.2.4.2 Visual Resource Management Classes and National Conservation Lands Outside of the DRECP

VRM Classes and National Conservation Land designations in the CDCA outside of the Planning Area are described in Section II.6.2.2.1 and Section II.6.2.3.3.

II.6.3 NCCP Elements of Alternative 3

The following provides an overview of the NCCP elements of Alternative 3. At the broadest level, the NCCP includes elements related to Covered Activities and conservation elements.

As described for the Preferred Alternative, each of the NCCP alternatives includes the full range of Covered Activities anticipated under the DRECP for each of the interagency Plan-wide alternatives. The Plan-wide description of Covered Activities serves as the description of Covered Activities for the NCCP alternatives.

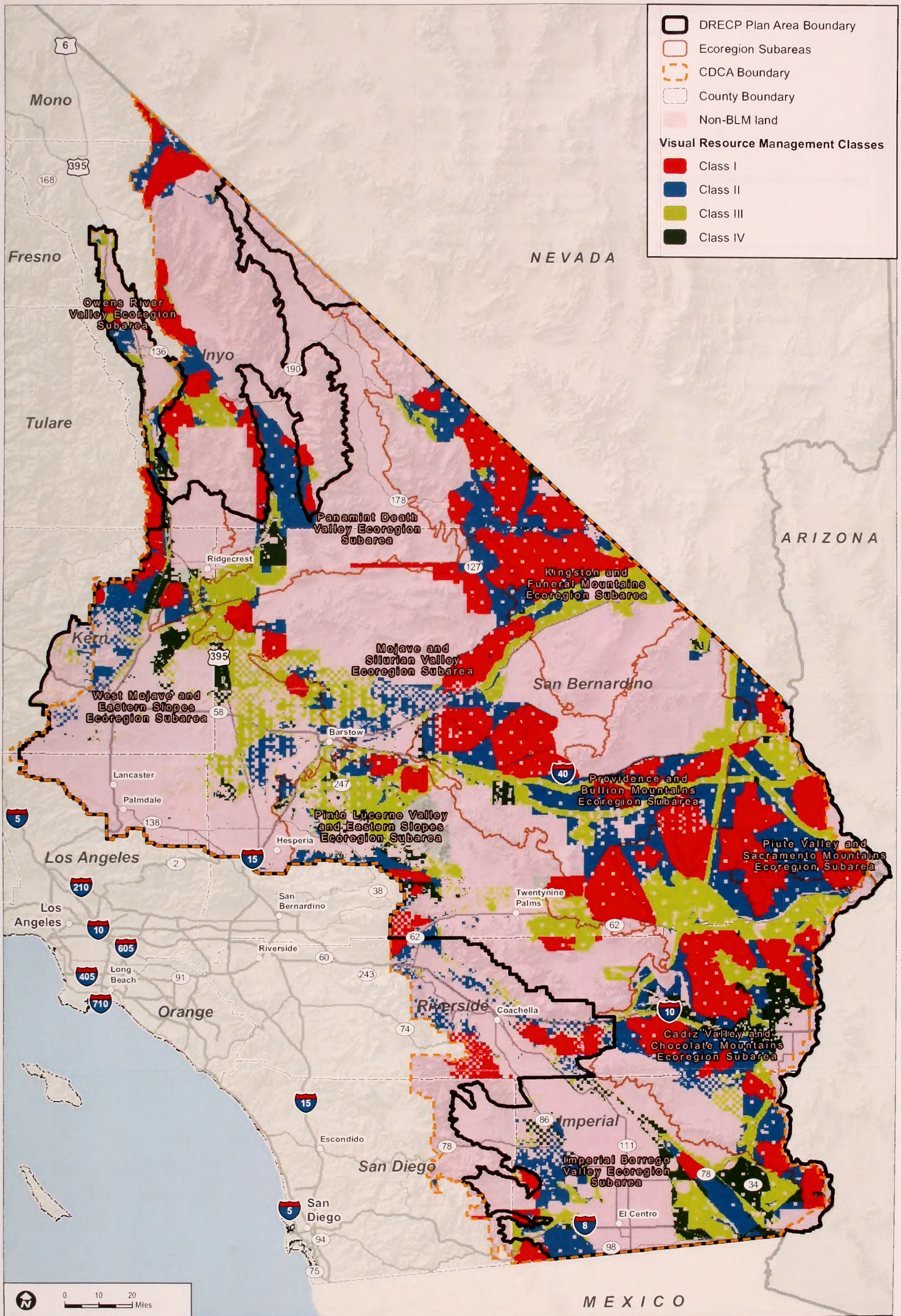
The Natural Community Conservation Planning Act requires that NCCPs provide for the conservation and management of Covered Species and natural communities on a landscape or ecosystem level through the creation and long-term management of habitat reserves and the application of other equivalent conservation measures. To reflect the conservation that would occur under the NCCP, the NCCP elements of each alternative define the following means of providing conservation within the DRECP Plan-Wide Reserve Design Envelope: an NCCP Conceptual Plan-Wide Reserve Design, a DRECP NCCP Reserve Design, and other conservation actions.

Reserve design features and other conservation actions within the NCCP alternatives are consistent with and nested within the DRECP Plan-Wide Reserve Design Envelope in the interagency Plan-wide alternatives, but differ in terms of how reserve design features are grouped within the NCCP Conceptual Plan-Wide Reserve Design and the DRECP NCCP Reserve Design. Table II.6-15 summarizes the NCCP elements of Alternative 3. As shown in Table II.6-15, the DRECP NCCP Reserve Design covers approximately 429,000 acres of BLM and non-BLM lands. Figure II.6-7 depicts the NCCP for Alternative 3. Refer to Appendix N for a description of how the Plan-wide description of the alternative serves as the description of the NCCP for the DRECP.

Table II.6-15
NCCP for Alternative 3

NCCP Components	Acreage
DFAs	1,405,000
Study Area Lands	11,000
Future Assessment Areas	11,000
DRECP Plan-Wide Reserve Design Envelope	15,161,000
Existing conservation areas	7,662,000
NCCP Conceptual Plan-Wide Reserve Design	1,878,000
Inside the DRECP NCCP Reserve Design	429,000
BLM LUPA conservation designations	320,000
Biological Conservation Priority Areas on non-BLM lands	109,000
Outside the DRECP NCCP Reserve Design	1,449,000
BLM LUPA conservation designations	973,000
Biological Conservation Priority Areas on non-BLM lands	476,000
BLM LUPA conservation designations outside the NCCP Conceptual Plan-Wide Reserve Design	3,737,000
Biological Conservation Planning Areas on non-BLM lands	1,884,000
Urban Areas, Other Lands, and Undesignated Areas	6,008,000
Plan Area Total	**22,585,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.



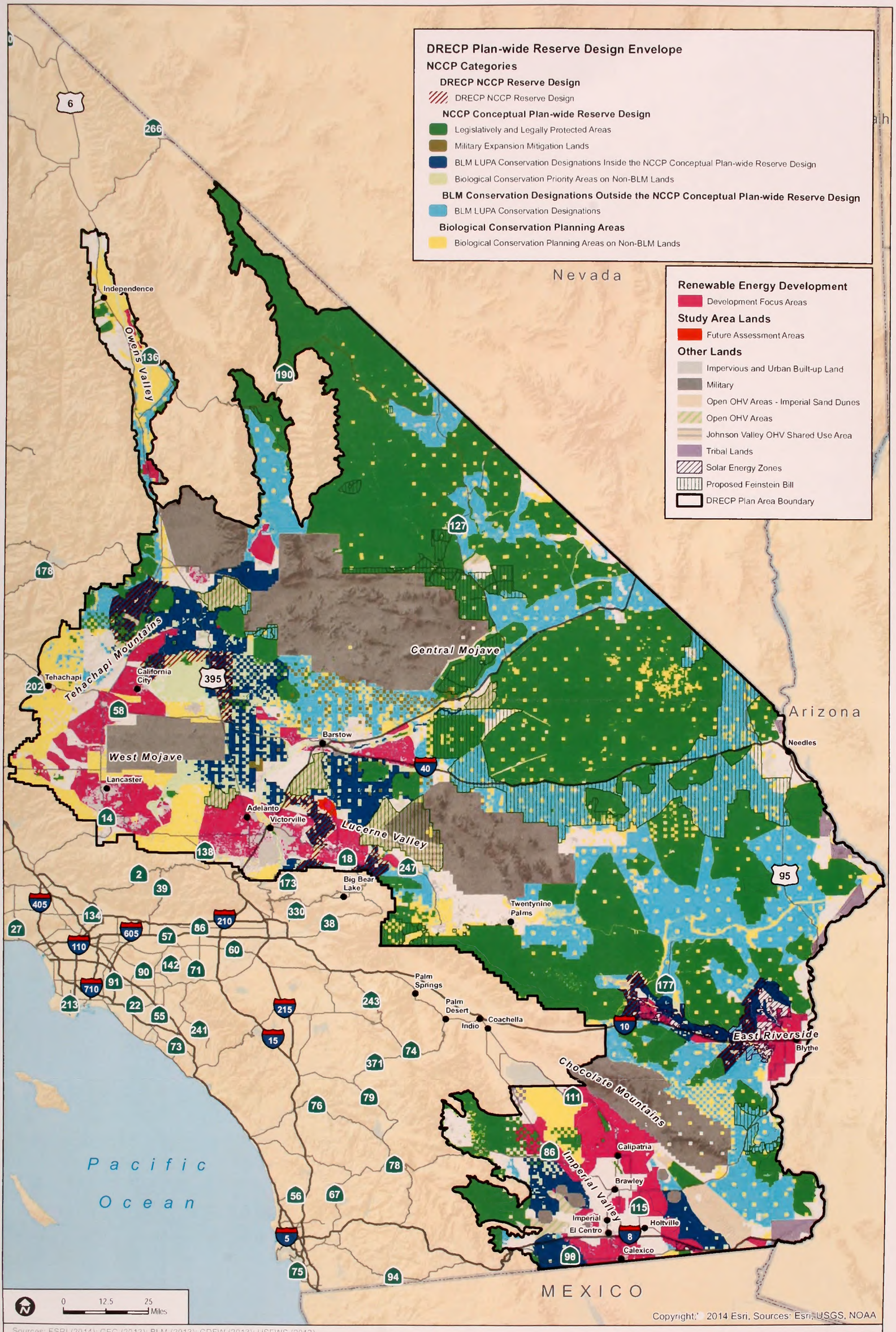
Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.6-6

Alternative 3 - BLM Visual Resource Management Classes

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_II\fgII.6-6.mxd 8/19/2014

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.6-7

Alternative 3 - Natural Community Conservation Plan

INTENTIONALLY LEFT BLANK

II.6.4 GCP Elements of Alternative 3

As described in Section II.3.4 for the Preferred Alternative, the DRECP's GCP elements include a streamlined permitting process for renewable energy development by nonfederal project proponents in the Plan Area. This section is intended to provide the description of the GCP elements of the DRECP for Alternative 3.

II.6.4.1 Overview of the Nonfederal GCP Lands of Alternative 3

The GCP component of Alternative 3 includes all nonfederal lands within the DRECP DFAs and Conservation Planning Areas, as well as nonfederal inholdings within Existing Conservation Lands and BLM-administered lands in the Plan Area; these lands comprise the GCP Permit Area in the Plan Area. The larger GCP Plan Area encompasses the GCP Permit Area as well as Priority Conservation Areas outside the GCP Permit Area where permittee non-acquisition mitigation measures may be implemented (i.e., BLM-administered lands corresponding to the DRECP NCCP Reserve Design). Nonfederal lands include privately owned lands and lands owned by state and local jurisdictions. The conservation strategy and Covered Activities under the GCP would be consistent with the DRECP. Table II.6-16 provides a summary of Alternative 3 within the GCP component of the DRECP; Figure II.6-8 depicts Alternative 3 within the GCP area.

As shown in Table II.6-16, the GCP portion of the Plan Area covers a total of 1,175,000 acres of DFAs on nonfederal lands (83% of the total DFAs in Alternative 3). The biological resources environmental setting/affected environment for the GCP portion of the Plan Area is described in Volume III, Section III.7.11. The impact analysis for Alternative 3 on nonfederal lands within the GCP area is provided in Volume IV, Section IV.7.3.5.4.

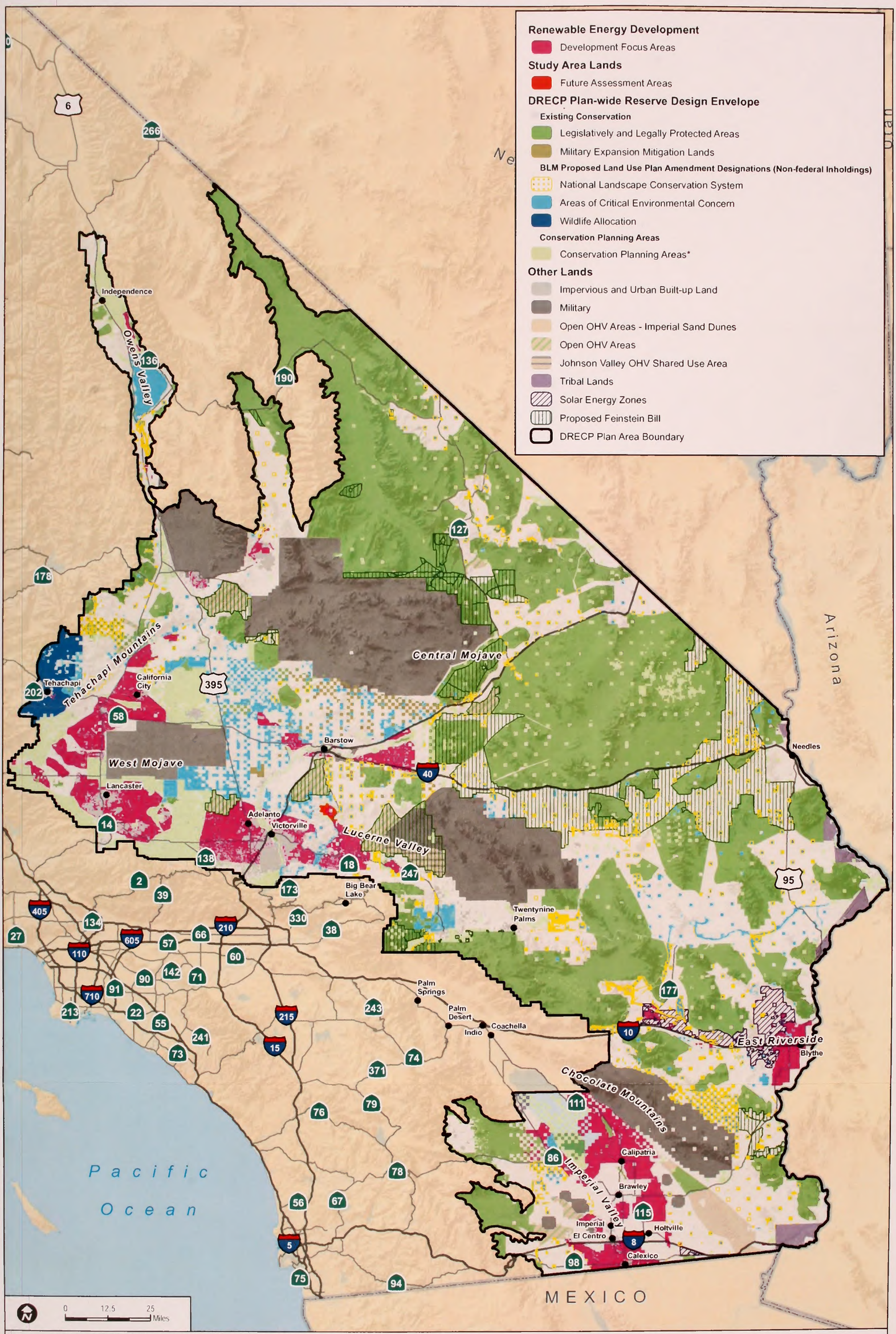
Table II.6-16
Alternative 3 within the GCP

Alternative Components	Acreage
DFAs (Nonfederal Lands Only)	1,175,000
Study Area Lands (Nonfederal Lands Only)	8,000
Future Assessment Areas	8,000
DRECP Plan-wide Reserve Design Envelope (Nonfederal Lands Only)	2,830,000
Existing conservation areas	434,000
BLM LUPA conservation designations	1,222,000
Conservation Planning Areas	1,174,000

Notes: Urban areas, Other Lands, and Undesignated Areas also occur on nonfederal lands but are not reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.6.4.2 Overview of the GCP Permitting Process

The GCP permitting process under Alternative 3 would be the same as is described for the Preferred Alternative in Section II.3.4.2 and in Appendix M.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.6-8

Alternative 3 - General Conservation Plan

INTENTIONALLY LEFT BLANK

II.7 ALTERNATIVE 4

Alternative 4 is one of five action alternatives considered and analyzed in the Desert Renewable Energy Conservation Plan (DRECP or Plan) and Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The description of Alternative 4 is first provided at an interagency level (Section II.7.1), which describes all Plan elements of the alternative. After the interagency description, the individual elements of the alternative are described, including the Bureau of Land Management (BLM) Land Use Plan Amendment (LUPA) elements of the DRECP (Section II.7.2), the Natural Community Conservation Plan (NCCP) elements of the DRECP (Section II.7.3), and the General Conservation Plan (GCP) elements of the DRECP (Section II.7.4).

II.7.1 Interagency Description of Alternative 4

The interagency description of Alternative 4 includes the following main sections: Overview of Alternative 4, Conservation Strategy, Monitoring and Adaptive Management Program, Description of the Covered Activities, and Plan Implementation. The description of Alternative 4 for the DRECP and EIR/EIS encompasses the overall conservation strategy and description of Covered Activities on federal and nonfederal lands (i.e., state, county, city, and privately owned lands) within the Plan Area.

II.7.1.1 Overview of Alternative 4

The following provides a Plan-wide overview of Alternative 4. Alternative 4 integrates the renewable energy and resource conservation with other existing uses in the Plan Area and includes BLM LUPA elements, NCCP elements, and GCP elements.

Under Alternative 4 for the DRECP, an interagency conservation strategy for the Plan Area would be established that includes a streamlined process for the permitting of renewable energy and transmission development on both federal and nonfederal lands and a BLM LUPA providing Conservation and Management Actions (CMAs) for resources throughout the Plan Area on BLM-administered lands. Like the Preferred Alternative, Alternative 4 would consist of Development Focus Areas (DFAs), Study Area Lands, and the DRECP Plan-Wide Reserve Design Envelope (including existing conservation areas, BLM LUPA conservation designations, and Conservation Planning Areas), Impervious and Urban Built-up Lands, Other Lands (including Military, Open Off-Highway Vehicle [OHV] Areas, Tribal Lands), and Undesignated Areas. These areas are defined in Section II.3.1, Interagency Description of the Preferred Alternative.

The BLM LUPA (Section II.7.2) provides the land use plan amendment description related to these components on BLM-administered lands, and it also describes the Special Recreation Management Areas (SRMAs) designations and other CMAs for resources on

BLM-administered lands. The NCCP (Section II.7.3) and GCP for nonfederal lands (Section II.7.4) describe how these Plan components would provide for incidental take authorization of Covered Species under Section 2835 of the state Natural Community Conservation Planning Act and Section 10 of the federal Endangered Species Act.

Alternatives under the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA), including Alternative 4, must consider potential impacts on all aspects of the human environment, both the natural environment and the built environment, including biological and nonbiological resources. Additionally, Appendix M contains all the required components of a GCP.

Figure II.7-1 provides the Plan-wide map for Alternative 4.

Table II.7-1 provides an overview summary for Alternative 4. In summary, Alternative 4 would include approximately 1,608,000 acres of DFAs. Study Area Lands include 588,000 acres of DRECP Variance Lands. The DRECP Plan-Wide Reserve Design Envelope would include 7,662,000 acres of existing conservation areas, 5,606,000 acres of BLM LUPA conservation designations, and 1,210,000 acres of Conservation Planning Areas. Of the over 19 million acres of the Plan Area outside of Military Lands, BLM Open OHV Areas, and Tribal Lands, there are approximately 13,565,000 acres of federally owned or administered lands and 5,420,000 of nonfederal lands. The BLM LUPA elements of Alternative 4 are described in Section II.7.2; the NCCP elements of Alternative 4 are described in Section II.7.3; and the GCP elements of Alternative 4 addressing nonfederal lands are described in Section II.7.4. Exhibit II.7-1 graphically displays the components of Alternative 4.

Table II.7-1
Interagency DRECP Plan-Wide Alternative 4

Alternative 4	Acreage
DFAs	**1,608,000**
Study Area Lands	**588,000**
DRECP Variance Lands	588,000
DRECP Plan-Wide Reserve Design Envelope	**14,478,000**
Existing conservation areas	7,662,000
BLM LUPA conservation designations	5,606,000
Conservation Planning Areas	1,210,000
Urban Areas, Other Lands, and Undesignated Areas	**5,910,000**
Impervious and Urban Built-up Land	525,000
Military Lands	3,019,000
Open OHV Areas	264,000
Imperial Sand Dunes, including the BLM Open OHV Area	132,000

Table II.7-1
Interagency DRECP Plan-Wide Alternative 4

Alternative 4	Acreage
Johnson Valley OHV Shared Use Area	56,000
Tribal Lands	129,000
Undesignated Areas	1786,000
Total	22,585,000

Notes: This Plan-wide alternative summary includes both federal lands and nonfederal lands. The summary specific to BLM-administered lands is provided in Section II.7.2, and the summary specific to nonfederal lands is provided in Section II.7.4. Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. The BLM LUPA would also designate approximately 2,489,000 acres of SRMAs in addition to the 193,000 acres of existing SRMAs, which are BLM designation overlays that overlap portions of the components provided in this table and described in Section II.7.2. Impervious and urban built-up lands occur within BLM LUPA conservation designations and DFAs where not explicitly included in the urban category reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

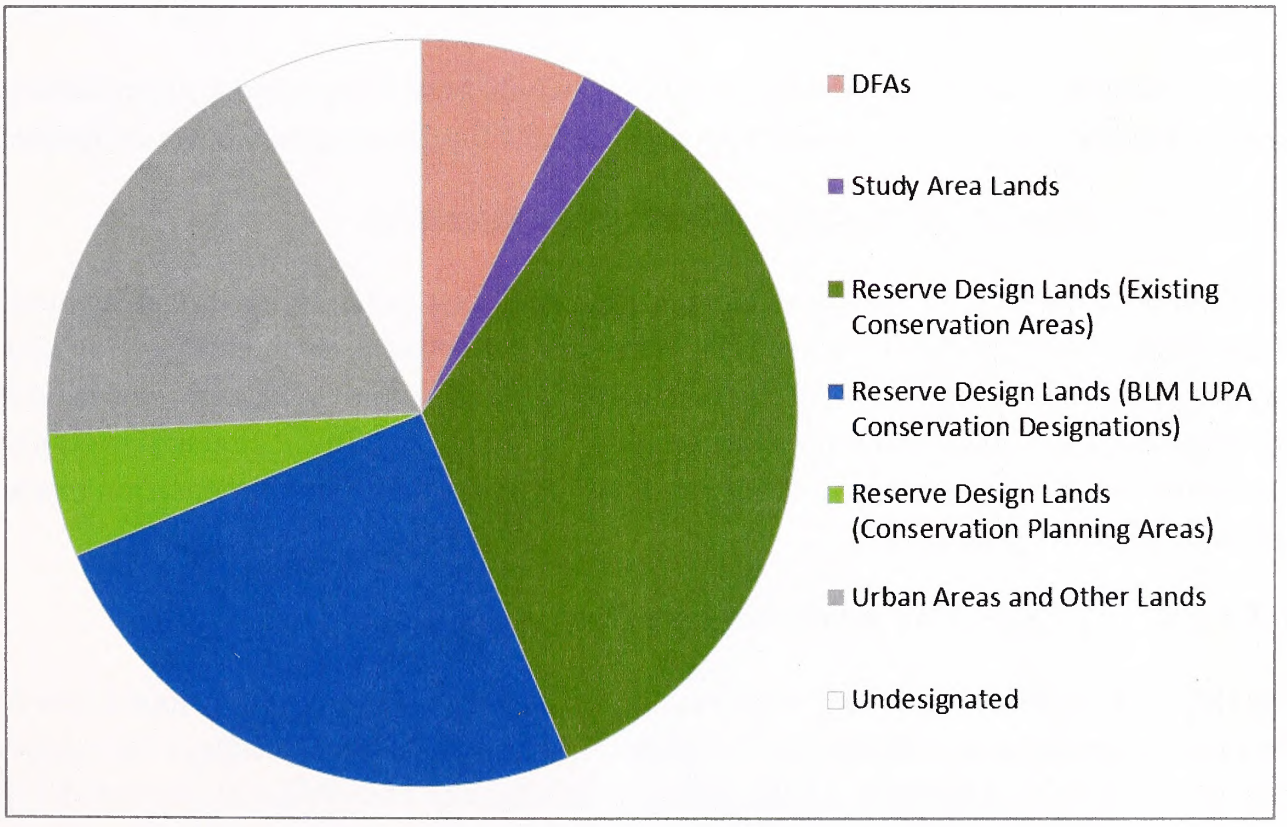


Exhibit II.7-1 Components of Alternative 4

II.7.1.2 Conservation Strategy

The Plan-wide conservation strategy for the DRECP was developed through the planning process described in Volume I, Chapter I.3. The process included: (1) establishing the conservation focus on biological, cultural, recreation, and visual resources; (2) gathering baseline information; (3) identifying Biological Goals and Objectives (BGOs) and goals and objectives for nonbiological resources on BLM-administered land; (4) developing a comprehensive reserve design; (4) developing biological CMAs and CMAs for nonbiological resources on BLM land; and (6) developing a Monitoring and Adaptive Management Program. The approach and structure of the conservation strategy for Alternative 4 is the same as the conservation strategy for the Preferred Alternative.

II.7.1.2.1 Overview of the Structure and Content of the Biological Conservation Strategy for Alternative 4

The approach and structure of the conservation strategy under Alternative 4 are the same as that for the Preferred Alternative as described in Section II.3.1.2.

II.7.1.2.2 DRECP Proposed Covered Species List

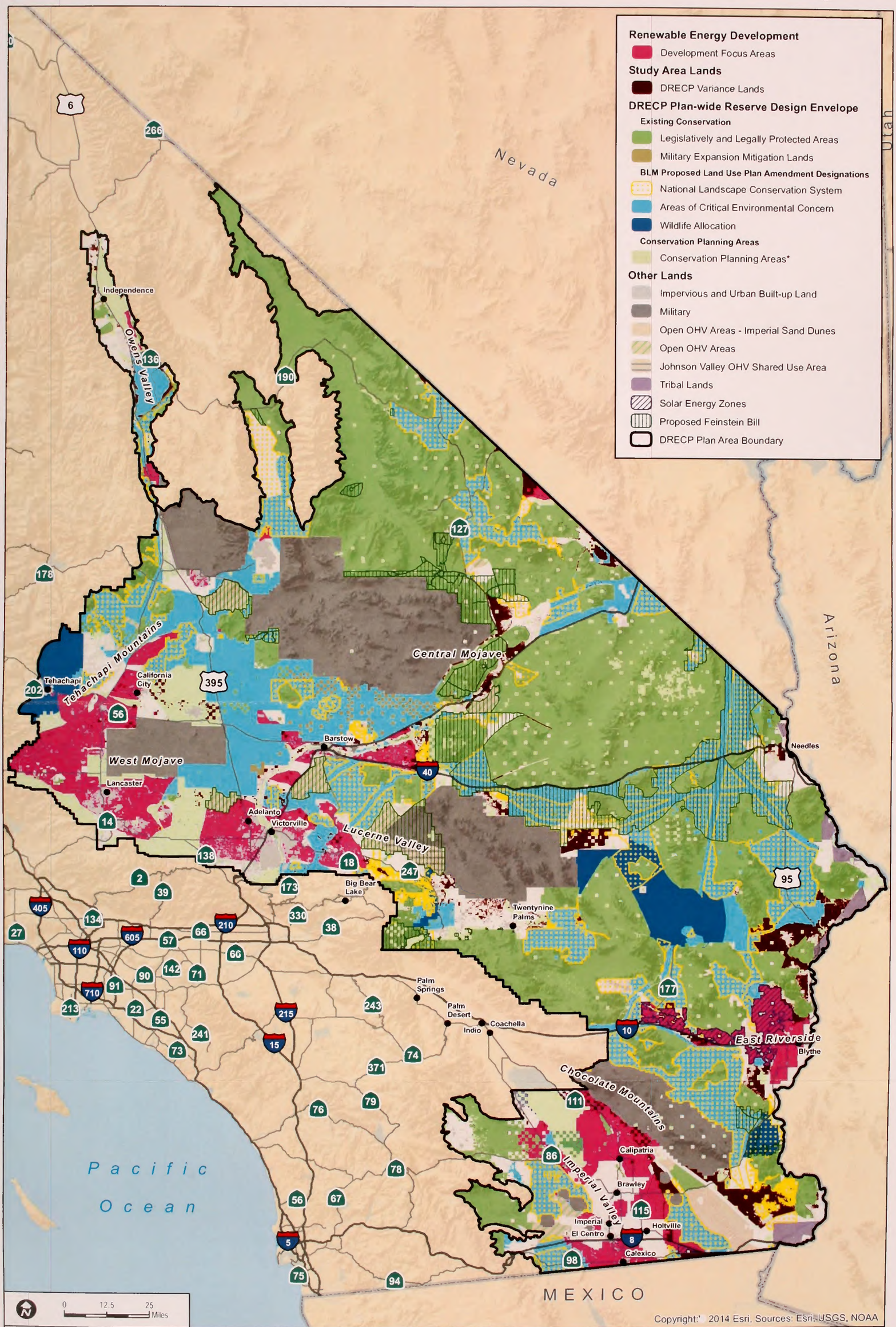
The proposed HCP and NCCP Covered Species list would be the same under Alternative 4 as it is under the Preferred Alternative. See Section II.3.1.2.2 for the proposed Covered Species list.

II.7.1.2.3 Plan-Wide Biological Goals and Objectives

The Plan-wide BGOs provide the broad guiding principles and define the desired outcome of the DRECP conservation strategy. The Plan-wide BGOs are described in Section I.3.4.3 and are provided in Appendix C at the landscape, natural community, and species levels. The Plan-wide BGOs are common to and apply to each of the DRECP alternatives. The Step-Down Biological Objectives describe the contribution of DRECP implementation towards achieving the Plan-wide BGOs.

II.7.1.2.4 DRECP Plan-Wide Reserve Design Envelope

The DRECP Plan-Wide Reserve Design Envelope for Alternative 4 was developed based on the reserve design process described in Section I.3.4.4. The reserve design is the mapped expression of Plan-wide BGOs. Additionally, an interagency Plan-Wide Conservation Priority Area has been identified. This area represents the highest priority area for the creation and long-term management of habitat reserves for the conservation of the 37 proposed Covered Species and representative examples of the natural communities and processes that support them in the Plan Area. The interagency Plan-Wide Conservation Priority Area was the basis for the NCCP Conceptual Plan-Wide Reserve Design of each alternative.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.7-1
Alternative 4

INTENTIONALLY LEFT BLANK

Overall, the Plan-wide reserve design envelope for Alternative 4 would cover 76% of the Plan Area (excluding Military Lands, Tribal Lands, and BLM Open OHV Areas), which includes 7,662,000 acres of existing conservation areas, 5,606,000 acres of BLM LUPA conservation designations, and 1,210,000 acres of Conservation Planning Areas. Approximately 53% of the DRECP Plan-Wide Reserve Design Envelope for Alternative 4 is made up of existing conservation areas (Legally and Legislatively Protected Areas [LLPAs] and Military Expansion Mitigation Lands [MEMLs]). Approximately 39% of the DRECP Plan-Wide Reserve Design Envelope for Alternative 4 is made up of BLM LUPA conservation designations including combinations of Areas of Critical Environmental Concern (ACECs), National Landscape Conservation System (NLCS), and Wildlife Allocations, and approximately 8% of the DRECP Plan-Wide Reserve Design Envelope for Alternative 4 is comprised of Conservation Planning Areas. Table II.7-2 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by county. Table II.7-3 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by ownership. Table II.7-4 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by ecoregion subarea.

The interagency Plan-Wide Conservation Priority Area within the reserve design envelope covers approximately 2,053,000 acres. This includes 1,857,000 acres of BLM LUPA conservation designations (1,399,000 acres on BLM-administered lands and 459,000 acres of non-BLM inholdings) and 196,000 acres of Conservation Planning Areas.

The DRECP Plan-Wide Reserve Design Envelope for Alternative 4 is comprised of an interconnected network of federal and nonfederal (both public and private) lands that spans seven counties, multiple ownerships, and ten ecoregion subareas of the Mojave and Colorado/Sonoran deserts of California. Figure II.7-2 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 4,and Appendix G provides figures of the reserve design envelope for each ecoregion subarea in the Plan Area. Table II.7-2 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by County. Table II.7-3 shows the DRECP Plan-Wide Reserve Design Envelope for under Alternative 4 by ownership. Table II.7-4 shows the DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by ecoregion subarea.

Table II.7-2
DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by County

County	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Imperial County	274,000	587,000	147,000	1,008,000
Inyo County	1,921,000	594,000	135,000	2,650,000
Kern County	135,000	539,000	188,000	862,000
Los Angeles County	6,000	33,000	250,000	289,000

Table II.7-2
DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by County

County	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Riverside County	982,000	503,000	57,000	1,542,000
San Bernardino County	4,145,000	3,350,000	427,000	7,922,000
San Diego County	199,000	0	6,000	205,000
Total	**7,662,000**	**5,606,000**	**1,210,000**	**14,478,000**

Note: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. These include both existing and proposed conservation designations. The reserve design envelope also includes an interagency Plan-Wide Conservation Priority Area that covered 2,053,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.7-3
DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by Ownership Class

Ownership Class	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Federal Lands				
BLM-administered land	3,279,000	4,437,000	—	7,716,000
Other federal land	3,949,000	9,000	62,000	4,021,000
Nonfederal Lands				
Private land	31,000	942,000	859,000	1,832,000
State and local public land	403,000	217,000	289,000	909,000
Total	**7,662,000**	**5,606,000**	**1,210,00**	**14,478,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. These include both existing and proposed conservation designations. The reserve design envelope also includes an interagency Plan-Wide Conservation Priority Area that covered 2,053,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.7-4
DRECP Plan-Wide Reserve Design Envelope for Alternative 4 by Ecoregion Subarea

Ecoregion Subarea	Existing Conservation Areas (acres)	BLM LUPA Conservation Designations (acres)	Conservation Planning Areas (acres)	Total Acreage
Cadiz Valley and Chocolate Mountains	842,000	1,167,000	74,000	2,082,000
Imperial Borrego Valley	355,000	352,000	143,000	849,000
Kingston and Funeral Mountains	1,767,000	474,000	83,000	2,324,000
Mojave and Silurian Valley	786,000	467,000	52,000	1,306,000
Owens River Valley	32,000	145,000	91,000	268,000
Panamint Death Valley	1,253,000	306,000	16,000	1,574,000
Pinto Lucerne Valley and Eastern Slopes	739,000	477,000	75,000	1,291,000
Piute Valley and Sacramento Mountains	423,000	440,000	29,000	892,000
Providence and Bullion Mountains	1,305,000	737,000	131,000	2,173,000
West Mojave and Eastern Slopes	162,000	1,042,000	516,000	1,720,000
Total	**7,662,000**	**5,606,000**	**1,210,000**	**14,478,000**

Notes: Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA conservation designation acreage reported includes both BLM-administered lands and non-BLM lands inholdings within the designation. These include both existing and proposed conservation designations. The reserve design envelope also includes an interagency Plan-Wide Conservation Priority Area that covered 2,053,000 acres of BLM LUPA conservation designations and Conservation Planning Areas. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Existing Conservation

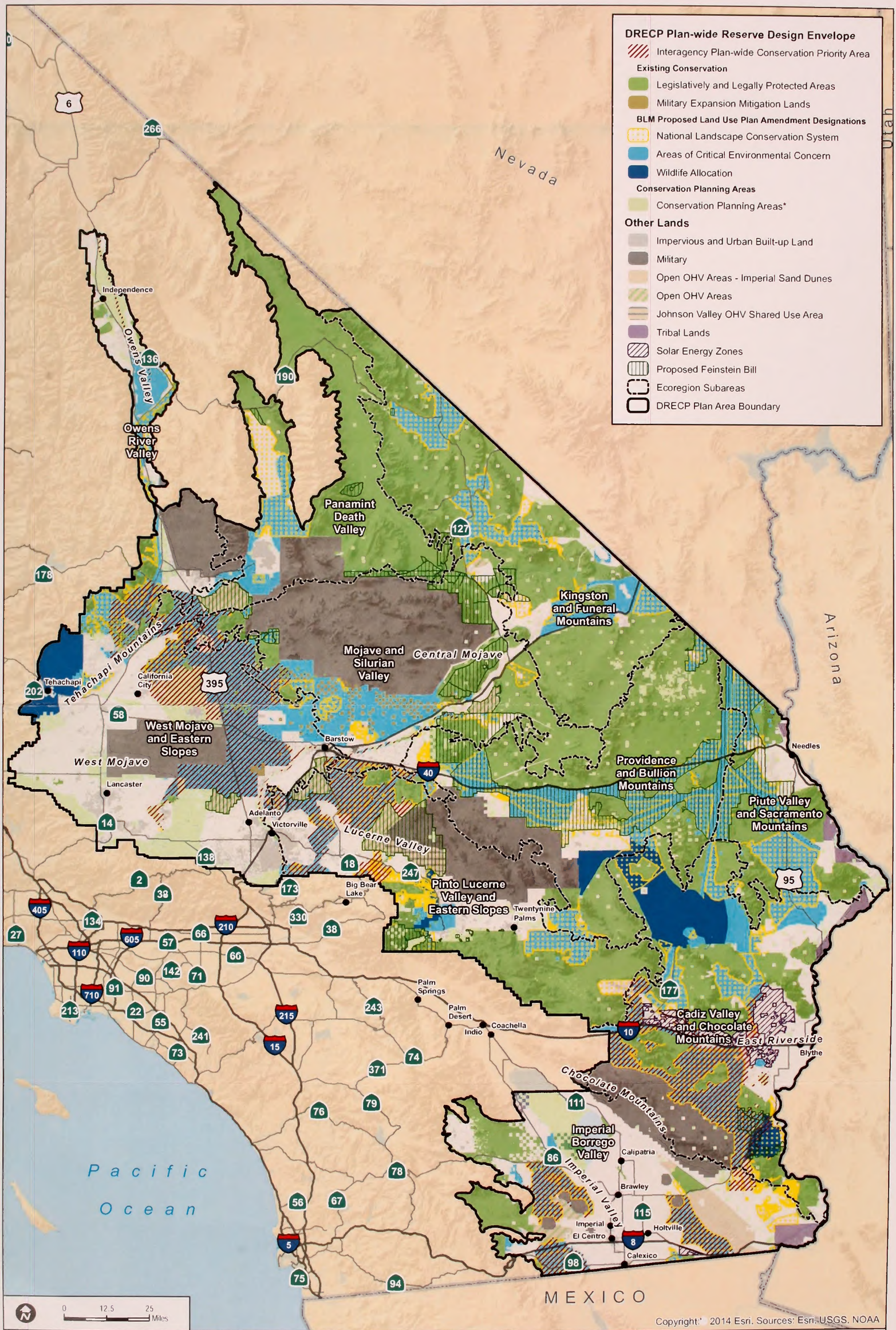
The Plan Area encompasses existing conservation areas that include LLPAs and MEMLs, which include among other designations Wilderness Areas, Wilderness Study Areas, National Parks, National Preserve, and California State Parks. LLPAs serve as the building blocks of the reserve design with existing boundaries and management regimes around which the BLM LUPA conservation designations and Conservation Planning Areas were designed. Existing conservation areas are the same for all alternatives. A full description of the existing conservation areas is provided in Section I.3.4.4 under the reserve design process. The existing conservation areas of the reserve design are shown on Figure II.7-2 and the ecoregion subarea maps of the reserve design in Appendix G.

BLM LUPA Conservation Designations

The BLM LUPA conservation designations are a critical component of the reserve design for the DRECP. These include existing and newly proposed NLCS designations, ACEC designations, and Wildlife Allocations. The land unit names included in BLM LUPA conservation designations in the reserve design by ecoregion subarea are provided in Section II.7.2 and Appendix L. The BLM LUPA conservation designations component of the reserve design is shown on Figure II.7-2 and the ecoregion subarea maps of the reserve design in Appendix G.

Conservation Planning Areas

Conservation Planning Areas are the portions of the reserve design located on private and non-BLM public lands that occur outside of existing conservation areas and BLM LUPA conservation designations. Reserve areas would be assembled by acquiring land or conservation easements from willing sellers within the Conservation Planning Areas to provide compensatory mitigation for Covered Activities. The Conservation Planning Areas component of the reserve design is shown on Figure II.7-2 and the ecoregion subarea maps of the reserve design in Appendix G.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.7-2

Alternative 4 - Plan-wide Reserve Design Envelope

INTENTIONALLY LEFT BLANK

II.7.1.2.5 Biological Conservation and Management Actions

The biological conservation and management actions under Alternative 4 would be the same as those for the Preferred Alternative described in Section II.3.1.2.5, except as described in the following discussion. The CMAs related to BLM LUPA conservation designations under Alternative 4 are described in Section II.7.2 and in the BLM unit-specific worksheets in Appendix L.

- **Exceptions to the Preferred Alternative CMAs.** The Plan-wide CMAs, landscape-level CMAs, Natural Communities and Covered Species CMAs in the DFAs, Natural Communities and Covered Species CMAs in the Reserve, and the Transmission-specific CMAs under the heading "Exceptions to the Preferred Alternative CMAs" will specify the CMA code (e.g., RIP-WET-1) that corresponds to the specific CMA listed in the biological CMAs for the Preferred Alternative that will not be implemented for Alternative 4.
- **Additional CMAs to the Preferred Alternative.** The Plan-wide CMAs, landscape-level CMAs, Natural Communities and Covered Species CMAs in the DFAs, Natural Communities and Covered Species CMAs in the Reserve, and the Transmission-specific CMAs will list the additional biological CMAs under the heading "Additional CMAs to the Preferred Alternative" that will be implemented specifically for Alternative 4 in addition to the CMAs described for the Preferred Alternative.

The following provides the biological CMAs for Alternative 4, including the CMAs listed in the Preferred Alternative that will not be implemented and any additional CMAs that will specifically be implemented for Alternative 4 in addition to the biological CMAs in the Preferred Alternative.

II.7.1.2.5.1 Avoidance and Minimization CMAs

Alternative 4 would implement avoidance and minimization CMAs including the Avoidance and Minimization CMAs in the Preferred Alternative with the exceptions and additions as described in Section II.7.1.2.5.2 through Section II.7.1.2.5.6.

II.7.1.2.5.2 Plan-Wide Avoidance and Minimization

Under Alternative 4, the Plan-Wide Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.2) will be implemented with no exceptions or additions.

II.7.1.2.5.3 Landscape-Level Avoidance and Minimization CMAs

Under Alternative 4, the Landscape-Level Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.3) will be implemented with no exceptions or additions.

II.7.1.2.5.4 Natural Communities and Covered Species Avoidance and Minimization CMAs in DFAs

Under Alternative 4 the Natural Communities and Covered Species Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.4) will be implemented with no exceptions or additions.

II.7.1.2.5.5 Natural Communities and Covered Species Avoidance and Minimization CMAs in the Reserve

Under Alternative 4, the Natural Communities and Covered Species Avoidance and Minimization CMAs in the Reserve listed in the Preferred Alternative (Section II.3.1.2.5.5) will be implemented with no exceptions or additions.

II.7.1.2.5.6 Transmission Avoidance and Minimization CMAs

Under Alternative 4, the Transmission Avoidance and Minimization CMAs listed in the Preferred Alternative (Section II.3.1.2.5.6) will be implemented with no exceptions or additions.

II.7.1.2.5.7 Compensation CMAs

Under Alternative 4, the Compensation CMAs listed in the Preferred Alternative (Section II.3.1.2.5.7) will be implemented with no exceptions or additions.

II.7.1.3 Monitoring and Adaptive Management Program

The Monitoring and Adaptive Management Program for Alternative 4 would be the same as is described under the Preferred Alternative (see Section II.3.1.2).

II.7.1.4 Overview Description of Covered Activities

This section provides a description of the distribution, magnitude, and scope of activities under the DRECP for Alternative 4 under the DRECP. It describes how Alternative 4 would meet the renewable energy goals outlined in Section I.3.5. Renewable energy development technologies addressed under the DRECP include solar thermal, photovoltaic (PV) solar, wind, geothermal, and transmission.

On nonfederal lands, renewable energy and transmission siting, construction, operation, and decommissioning activities and conservation activities would be considered Covered Activities for incidental take permits under Section 2835 of the state Natural Community Conservation Planning Act and Section 10 of the federal Endangered Species Act. On BLM-administered lands, the BLM LUPA addresses renewable energy and transmission siting, construction, operation, and decommissioning activities, conservation activities, and other land use management decisions. The following describes the renewable energy generation-, transmission-, and conservation-related activities that would occur on both federal and nonfederal lands. The specific land use management decisions addressed by the BLM LUPA are described in Section II.7.2.

The section includes a summary of DFA distribution, and an estimated acreage associated with each technology. The description is subdivided by technology: solar, wind, geothermal, and transmission. For brevity, the description of the activities associated with siting, constructing, operating, and decommissioning are not repeated in this section as the information is identical to that which is provided in Section II.3.1.4.

In Alternative 4, renewable energy-related activities covered by the Plan would be confined to the DFAs. If the activities are not located within a DFA, they would no longer be considered a Covered Activity and would not enjoy the benefits the Plan affords. Generation development is focused in the West Mojave and Eastern Slopes, Imperial Borrego Valley, and Cadiz Valley and Chocolate Mountains ecoregion subareas, and around Barstow, with smaller areas in the Owens River Valley ecoregion subarea. Figure II.7-3 shows the DFAs for Alternative 4, and Appendix G provides figures of the DFAs for each ecoregion subarea in the Plan Area.

Table II.7-5a provides a DFA acreage summary by ecoregion subarea and by ecoregion subunit (i.e., finer-grained geographic subdivisions within each ecoregion subarea). Figure II.7-3 shows the corresponding ecoregion subunits.

Table II.7-5a
Alternative 4 Development Focus Areas by Ecoregion Subarea and Subunit

Ecoregion Subarea	Ecoregion Subunit	DFA Acreage
Cadiz Valley and Chocolate Mountains	Cadiz - 1	—
	Cadiz - 2	258,000
	Cadiz - 3	500
Imperial Borrego Valley	Imperial - 1	218,000
	Imperial - 2	228,000
	Imperial - 3	—
Kingston and Funeral Mountains	Kingston - 1	10,000
Mojave and Silurian Valley	Mojave - 1	40,000
	Mojave - 2	500
Owens River Valley	Owens -1	22,000
Panamint Death Valley	Panamint - 1	6,000
Pinto Lucerne Valley and Eastern Slopes	Pinto - 1	117,000
	Pinto - 2	—
Piute Valley and Sacramento Mountains	Piute - 1	—
Providence and Bullion Mountains	Providence - 1	12,000
	Providence - 2	—
West Mojave and Eastern Slopes	West Mojave - 1	5,000
	West Mojave - 2	304,000
	West Mojave - 3	30
	West Mojave - 4	217,000
	West Mojave - 5	128,000

Table II.7-5a
Alternative 4 Development Focus Areas by Ecoregion Subarea and Subunit

Ecoregion Subarea	Ecoregion Subunit	DFA Acreage
	West Mojave - 6	43,000
	Total DFA Acreage	**1,608,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

The distribution of different generation technologies varies depending on underlying factors that affect each technology. The method used to estimate the distribution of generation impacts across the Plan Area simultaneously accounts for the area available to each technology, potential interactions between technologies, and variation in the relative development potential of different DFAs. A more detailed description of the methodology is discussed in Chapter I.3 with additional detail provided in Appendix F. In the following section each technology is discussed separately.

In Alternative 4, renewable energy-related activities covered by the DRECP are confined to the DFAs. Available DFAs are more extensive than other alternatives, but still are predominately found in the West Mojave, Imperial Valley, East Riverside, and around Barstow, with smaller areas in the Owens Valley and on the Nevada border.

The distribution of different generation technologies varies depending on underlying factors that affect each technology. The method used to estimate the distribution of generation impacts across the Plan Area simultaneously accounts for the area available to each technology, potential interactions between technologies, and variation in the relative development potential of different DFAs. A more detailed description of the methodology is discussed in Chapter I.3 with additional detail provided in Appendix F. In the following section each technology is discussed separately.

Table II.7-5b includes a summary of the DFAs by technology type by county. The technology type listed indicates what technologies are assumed feasible in the DFA. If multiple technologies are listed, that indicates that more than one renewable energy technology could be feasible in that DFA. DFAs suitable for solar only are the most common in most counties. DFAs suitable for solar by itself is the largest technology type category in Inyo and Los Angeles counties, but solar and wind together make up the largest technology type category in Kern, Riverside, and San Bernardino counties, and solar and geothermal together make up the largest technology type category in Imperial County. Geothermal is only proposed in Imperial, Inyo, and San Bernardino counties under Alternative 4. Table II.7-5c includes a summary of the DFAs by ownership. For Alternative 4, over 79% of the DFAs are on nonfederal lands and nearly 21% of the DFAs are on federal lands.

Table II.7-5b
Alternative 4 Development Focus Areas by Technology Type by County

Technology Type Category by County	DFA Acreage
Imperial County	**447,000**
Geothermal	113,000
Solar	132,000
Solar and geothermal	197,000
Solar and wind	70
Solar, wind, and geothermal	5,000
Wind and geothermal	40
Inyo County	**35,000**
Geothermal	8,000
Solar	22,000
Solar and geothermal	6,000
Kern County	**308,000**
Solar	122,000
Solar and wind	131,000
Wind	55,000
Los Angeles County	**218,000**
Solar	218,000
Riverside County	**259,000**
Solar	116,000
Solar and wind	139,000
Wind	4,000
San Bernardino County	**342,000**
Geothermal	500
Solar	129,000
Solar and wind	176,000
Wind	37,000
San Diego County	—
Total	**1,608,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Table II.7-5c
Alternative 4 Development Focus Areas by Ownership Class

Ownership Class	Total Acreage
Federal Lands	
BLM-administered land	258,000
Other federal land	17,000
Nonfederal Lands	
Private land	1,272,000
State and local public land	61,000
Total	**1,608,000**

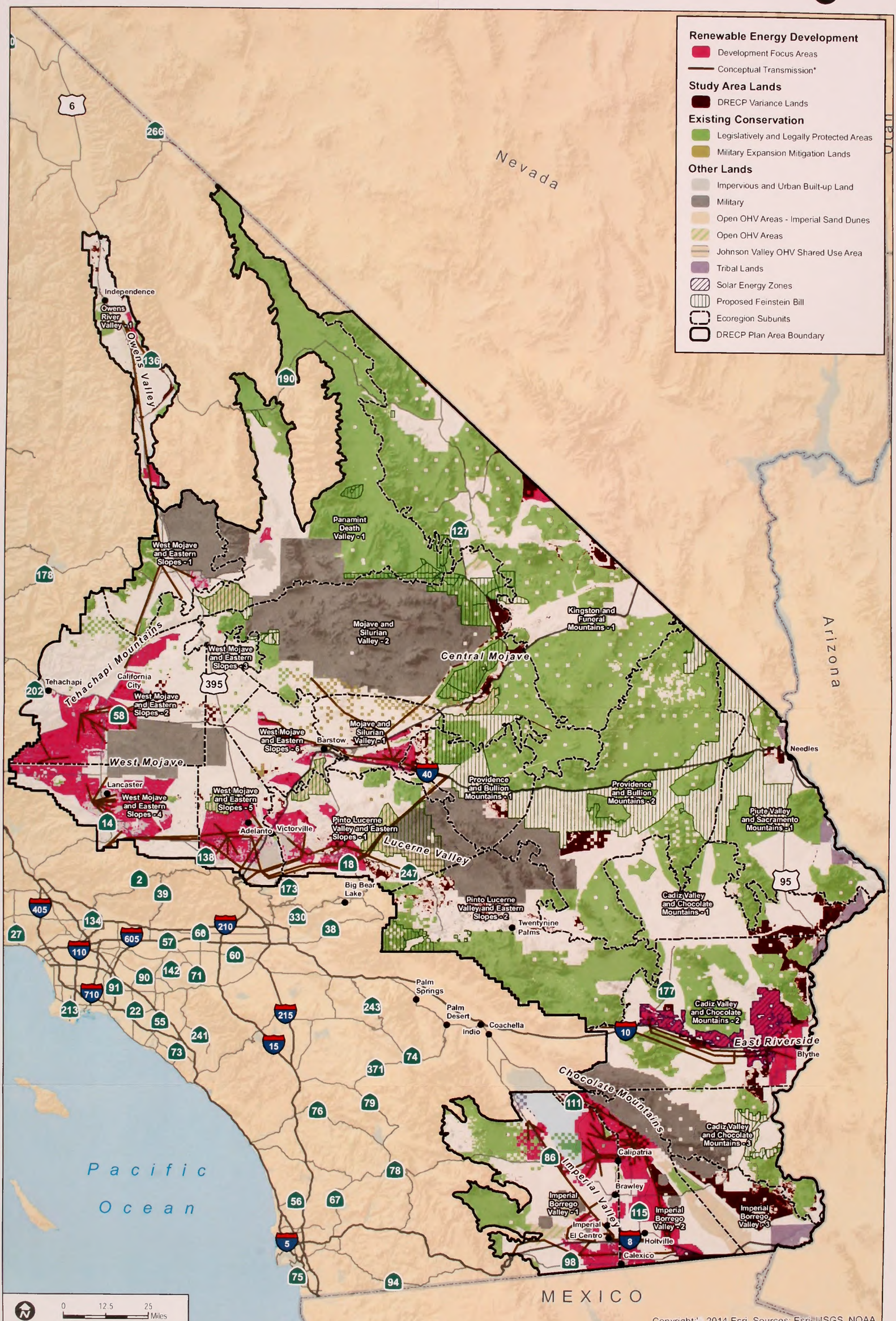
Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

The following sections contain a description of the distribution of the DFAs with an estimate of the total project area required for each technology and the associated area of permanent disturbance, a summary of which is provided in Table II.7-6. The estimated distribution of Covered Activities in the following sections aims to ensure that the DRECP evaluates a plausible magnitude of effects for each covered biological resource, such that the Plan would offer adequate minimization and mitigation for each covered technology.

Table II.7-6
Summary of Permanent Disturbance and Project Area for All Renewable Generation Technologies under Alternative 4

	Estimated Permanent Disturbance (Acres)	Total Project Area (Acres)
Solar	108,000	108,000
Wind	7,000	124,000
Geothermal	17,000	17,000
Distributed generation	15,000	15,000
Total	**147,000**	**264,000**

Notes: See Chapter I.3 and Appendix F for detailed descriptions of the methodology used to identify the acreage amounts listed in this table. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*Transmission lines shown are based on the DRECP Transmission Technical Group (TTG) Report, which provides a conceptual transmission plan for the DRECP alternatives and is not intended for siting or alignment purposes.

FIGURE II.7-3

Alternative 4 - Plan-wide DFAs

INTENTIONALLY LEFT BLANK

II.7.1.4.1 Solar Energy Generation (Including Utility-Scale Distributed Generation)[1]

This section provides an estimate of the size of impacts for Covered Activities associated with solar and utility-scale distributed generation projects that would be covered by the Plan under Alternative 4. Construction and operational activities are identical to those described in Section II.3.1.4.1 listed in Table II.3-21 (Preferred Alternative). Although the area available to solar generation would be more extensive in the DFAs than for other technologies, not all DFAs were considered suitable for solar development. Consequently, it was assumed that solar development would occur within the subset of DFAs identified Appendix G.

Solar projects can range from small-scale developments of a few megawatts (MWs) that occupy tens of acres up to 1,000 MW projects that occupy thousands of acres. Given the programmatic nature of the DRECP, extensive detailed analysis of effects that are project specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the acreage that would be affected by Covered Activities within different ecoregion subareas of the Plan Area. For the purpose of assessing the magnitude of impacts from ancillary facilities, construction impacts, and infrastructure, solar projects were assumed to be a mixture of 100 MW projects and 400 MW projects to represent the diversity of projects currently under review and construction. Similarly all ground-mounted distributed generation projects were assumed to be 20 MW projects.

When estimating the impacts of solar projects, it was assumed that the construction of projects would result in the loss of all habitat within the boundary of the project footprint. Two reasons are given for this: (1) Unlike other technologies, solar projects are generally fenced to exclude wildlife and result in modification to natural processes for the life of the project; and (2) although some vegetation may be preserved at some project locations, this is not universal and conditions of service often lead to the removal of vegetation to reduce fire risk. Further, the extensive removal, modification, and grading within the project boundary, even if vegetation is not completely removed, may lead to edge effects that effectively modify the remaining vegetation communities. The acreage requirements for roads, operation and maintenance facilities, and switchyards required for each facility are included in the overall estimated boundary of the solar project. Similarly, short-term land uses, such as construction and laydown yards, were assumed to be within the final boundary of the project, and therefore included within the boundary estimate. Table II.7-7 summarizes the land use for solar technologies, and provides the following information by ecoregion subarea for this alternative:

[1] For the purpose of analysis, all distributed generation was considered to be located in the same areas as utility-scale solar, therefore requiring the same ancillary facilities (i.e., Covered Activities) as utility-scale solar projects.

- Estimated Long-Term Ground Disturbance – Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of all potential solar generation facility footprints, including operations and maintenance building, switchyards, and road construction impacts. All ancillary facilities were assumed to be within the boundary of the Plan Area and result in total permanent disturbance to the entire project site. Due to the difficulty of restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.
- Total Project Area – An estimate of the total area occupied by a given project. For area-intensive technologies like solar generation, the total project area is identical to the total permanent ground-conversion impacts.

Table II.7-7
Long-Term Disturbance and Project Area Acreages Associated with Solar and Ground-Mounted Distributed Generation by Ecoregion Subarea – Alternative 4

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	38,000	27,000	11,000
Imperial Borrego Valley	31,000	2,000	28,000
Kingston and Funeral Mountains	600	—	600
Mojave and Silurian Valley	3,000	—	3,000
Owens River Valley	2,000	800	900
Panamint Death Valley	800	700	200
Pinto Lucerne Valley and Eastern Slopes	6,000	200	6,000
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	1,000	200	900
West Mojave and Eastern Slopes	41,000	3,000	38,000
Total	**123,000**	**33,000**	**89,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.7.1.4.2 Wind Energy Generation

This section provides an estimate of the size of land use for activities associated with wind projects that would be covered by the DRECP. Construction and operational activities are identical to those described in Section II.3.1.4.2 and listed in Table II.3-23 of the Preferred Alternative.

The area available to wind development was constrained by several factors, including areas where construction was considered infeasible, and areas where turbine construction has

been precluded by ordinance or general policy. Consequently, it was assumed that wind development would occur within the subset of DFAs identified in Appendix G.

Wind projects can range from small-scale developments of a few MWs that occupy tens of acres up to several hundred MW projects that occupy thousands acres. Given the programmatic nature of the DRECP, extensive detailed analysis of effects that are project specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the acreage that would be affected by Covered Activities within different ecoregion subareas of the Plan.

Wind projects result in a relatively diffuse impacts spread across a wide area. Turbines are widely spaced and connected by permanent access roads and transmission infrastructure, with a centralized maintenance facilities and switchyards. Unlike solar, not all the land within the boundary of a wind project was assumed to be permanently disturbed by project activities. Estimates of disturbed acreage were the sum of the estimated acreage required for turbine pads, roads, ancillary facilities, and supporting infrastructure. Short-term construction activities, such as laydown yards, were assumed to result in permanent disturbance within the project boundary, and were also included in the estimate of permanently disturbed acreage. In addition to estimates of ground disturbance, the area likely to be impacted by the operation of the turbine rotors (airspace) was also estimated. The turbines were grouped into conceptual projects of up to 200 MWs. Table II.7-8 provides the following information by ecoregion subarea:

- Total Project Area – An estimate of the total area occupied by a given project. For technologies where the impacts may be spread across a greater area (e.g., wind energy generation), the permanent impacts are distributed over a larger area.
- Estimated Long Term Ground Disturbance – Estimated total acreage affected by Covered Activities. This is effectively a summation of all potential wind generation facility footprints, including individual turbine pad, operations and maintenance building, switchyard, and road construction impacts. This estimate also includes the additional land use that would occur as a consequence of construction activities, including construction areas, laydown yards, and storage facilities. All activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.
- Turbine Rotor Swept Area – An estimate of the total aerial acreage affected by the rotation of turbine blades while a wind facility is operating.

Table II.7-8
Project Area, Long-Term Disturbance, and Rotor Swept Area Acreages Associated with Wind Generation by Ecoregion Subarea – Alternative 4

Ecoregion Subarea	Project Area			Long-Term Disturbance			Rotor Swept Area		
	Plan-Wide	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*	*Plan-Wide*	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	47,000	41,000	6,000	3,000	2,000	300	1,000	1,000	200
Imperial Borrego Valley	1,000	—	1,000	100	—	100	—	—	—
Kingston and Funeral Mountains	—	—	—	—	—	—	—	—	—
Mojave and Silurian Valley	—	—	—	—	—	—	—	—	—
Owens River Valley	—	—	—	—	—	—	—	—	—
Panamint Death Valley	—	—	—	—	—	—	—	—	—
Pinto Lucerne Valley and Eastern Slopes	23,000	3,000	20,000	1,000	200	1,000	700	100	600
Piute Valley, Sacramento Mountains	—	—	—	—	—	—	—	—	—
Providence and Bullion Mountains	—	—	—	—	—	—	—	—	—
West Mojave and Eastern Slopes	54,000	3,000	51,000	3,000	200	3,000	2,000	100	2,000
Total	**125,000**	**47,000**	**78,000**	**7,000**	**3,000**	**5,000**	**4,000**	**1,200**	**3,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.7.1.4.3 Geothermal Energy Generation

This section provides an estimate of the size of impacts for Covered Activities associated with geothermal projects that would be covered by the DRECP. Construction and operational activities are identical to those described in Section II.3.1.4.3 and listed in Table II.3-25 of the Preferred Alternative.

The area available to geothermal development was limited to areas in the Imperial Borrego Valley and part of the Owens River Valley ecoregion subareas, where geothermal resources are concentrated. Consequently, it was assumed that geothermal development would occur within the subset of DFAs identified in Appendix G.

Geothermal projects would be more limited in size (in the Plan Area) than other renewable energy projects. Recent projects vary from about 50 MW to 160 MW in size. For analysis within the DRECP, geothermal projects were assumed be typically 50 MW in size. Given the programmatic nature of the DRECP, extensive detailed analysis of effects that are project specific (i.e., geographically site-specific) is infeasible. Consequently, the magnitudes of impacts are described in terms of the estimated acreage that would be affected by Covered Activities within different ecoregion subareas of the Plan.

Geothermal projects result in extensive impacts associated with the power block and ancillary facilities, with more dispersed impacts resulting from the well-fields. Well heads that inject and collect heat transfer fluids are widely spaced and connected by permanent access roads and pipelines to the centrally located power block and steam turbine facilities. All the land within the boundary of a geothermal project was assumed to be permanently disturbed by project activities. Estimates of disturbed acreage include the acreage required for well head pads, roads, ancillary facilities, and supporting infrastructure, and also includes the land fragmented by the roads, pipelines, and well pads in the well-field, which was assumed to retain no conservation value. Short-term construction activities, such as laydown yards, were assumed to result in permanent disturbance within the project boundary, and are also included in the estimate of permanently disturbed acreage.. Table II.7-9 summarizes the land use for geothermal technologies, and provides the following information by ecoregion subarea:

- Estimated Long-Term Ground Disturbance – Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of all potential geothermal energy generation facility footprints, including operations and maintenance building, switchyard, and road construction impacts. This estimate also includes the additional land use that occurs as consequence of construction activities, and the fragmented land within the well-field. Due to the difficulty of restoration in an arid environment, all activities that result in vegetation removal or disturbance were considered permanent.

- Total Project Area – An estimate of the total area occupied by a given project. For technologies where the land use may be spread across a greater area (e.g., geothermal energy generation), the permanent land disturbance is distributed over a larger area.

Table II.7-9
Long-Term Disturbance and Project Area Acreages Associated with Geothermal Generation by Ecoregion Subarea – Alternative 4

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	—	—	—
Imperial Borrego Valley	16,000	4,000	11,000
Kingston and Funeral Mountains	—	—	—
Mojave and Silurian Valley	—	—	—
Owens River Valley	1,000	1,000	100
Panamint Death Valley	—	—	—
Pinto Lucerne Valley and Eastern Slopes	—	—	—
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	—	—	—
West Mojave and Eastern Slopes	—	—	—
Total	**17,000**	**5,000**	**11,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.7.1.4.4 Transmission

The transmission Covered Activities components for Alternative 4 would be the same as those described for the Preferred Alternative in Section II.3.1.4.4.

The ecoregional distribution of major transmission, substation, and gen-tie land use described in Table II.7-10 provides an estimate of right-of-way (ROW) requirements in acres from which it was possible to estimate the relative land use requirements of transmission-related Covered Activities described in Section II.3.1.4.4.

- Estimated Long-Term Ground Disturbance – Estimated total acreage affected by Covered Activities such as vegetation clearance, grading, and construction. This is effectively a summation of transmission impacts. This estimate also includes impacts that occur as a consequence of construction activities, including construction areas, laydown yards, and storage facilities. Due to the difficulty of

restoration in a desert environment, all activities that result in vegetation removal or disturbance were considered permanent for the purpose of analysis.

Table II.7-10
Right-of-Way Requirements for Transmission Associated with Renewable Energy Development by Ecoregion Subarea – Alternative 4

Ecoregion Subarea	Long-Term Disturbance and Project Area (acres)		
	Plan-Wide	*LUPA*	*GCP*
Cadiz Valley and Chocolate Mountains	18,000	12,000	7,000
Imperial Borrego Valley	6,000	1,000	5,000
Kingston and Funeral Mountains	—	—	—
Mojave and Silurian Valley	600	300	300
Owens River Valley	900	500	400
Panamint Death Valley	200	200	—
Pinto Lucerne Valley and Eastern Slopes	2,000	800	1,000
Piute Valley and Sacramento Mountains	—	—	—
Providence and Bullion Mountains	300	200	100
West Mojave and Eastern Slopes	1,000	200	1,000
Total	**30,000**	**15,000**	**14,000**

Notes: All transmission disturbance data reflect intermediate disturbance values used for comparative purposes in the analysis. Disturbance area estimates reflecting the most recent Transmission Technical Group Report are provided in Appendix K. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.7.1.4.4.1 Transmission Outside the Plan Area

Transmission outside the Plan Area is not a Covered Activity under the DRECP. The potential direct effects of potential future transmission outside the Planning Area associated with development of covered renewable energy projects and transmission facilities inside the Planning Area are, however, are described and analyzed in Volume IV of the DRECP for each environmental resource category. This section presents a description of the transmission facilities outside the Planning Area that are programmatically analyzed in Volume IV.

The assumptions used to calculate acreages of effects for transmission and substation facilities inside the Plan Area are the same as those used to calculate effects of transmission and substations outside the Plan Area, and are described in Section II.3.1.4.4. However, approval of the DRECP would not result in any approval of the potential future transmission lines outside the Plan Area that are discussed here. All future transmission lines outside the Plan Area would require new applications by the developer or utility,

compliance with CEQA and NEPA as appropriate, and approvals from the developer (if municipal utilities or irrigation districts) or from the California Public Utilities Commission (if investor-owned utilities) prior to construction.

Table II.7-11 provides the acreage of effects for transmission and substations outside of the planning boundary. For ease of analysis, the transmission lines and substations have been clustered into general geographic boundaries.

Table II.7-11
Right-of-Way Requirements for Transmission Outside the DRECP Plan Area Associated with the Renewable Energy Development – Alternative 4

Geographic Area	Transmission	
	(Acres)	*(Miles)*
San Diego Area	2,000	94
Los Angeles Area	2,000	83
Central Valley	15,000	274
Rialto/Moreno Valley/Devers Area	12,000	484
Total Outside Plan Area	**32,000**	**935**

Source: Transmission Technical Group Report, provided as Appendix K.

The new transmission lines outside the Plan Area are presented in the following list.

- **San Diego Area:** One 500-kilovolt (kV) line from the Imperial Valley Substation to the existing Sycamore Substation (San Diego).
- **Los Angeles Area:**
  - One 500 kV line from the existing Vincent Substation (just inside the DRECP boundary) to the existing Lighthipe Substation.
  - One 500 kV from the existing Vincent Substation (just inside the DRECP boundary) to the existing Mesa Substation.
- **Central Valley:**
  - One 500 kV transmission line from the Whirlwind Substation (just inside the DRECP planning boundary) to the Pacific Gas and Electric (PG&E) Midway 500 kV Substation.
  - Two 500 kV lines from the PG&E Midway Substation to the Tesla/Tracy Substation.
- **Rialto/Moreno Valley/Devers Area:**
  - One 500 kV line from the Devers Substation to Vincent Substation.
  - One 500 kV lines from the Devers Substation to Rancho Vista Substation.

- Two 500 kV lines from Colorado River Substation to existing Valley Substation. About 103 miles of this line would be outside the DRECP boundary.
- Two 500 kV lines from Midway X (Imperial Valley) to the Devers Substation. About 200 miles of this corridor would be outside the DRECP boundary.

II.7.1.5 Plan Implementation

Plan implementation for Alternative 4 would be the same as that for the Preferred Alternative as described in Section II.3.1.5.

II.7.2 BLM LUPA Elements of Alternative 4

The BLM LUPA elements of Alternative 4 are the same elements as the Preferred Alternative (see Figure II.7-4).

As shown in Table II.7.12, approximately 9,834,000 acres within the Plan Area occur within the BLM LUPA on BLM-administered lands. Under Alternative 4, approximately 258,000 acres of DFAs occur on BLM-administered lands.

In this area, existing conservation on BLM lands totals 3,264,000 acres including 3,260,000 acres of LLPAs. All of the BLM LLPAs are Wilderness or Wilderness Study Area and are managed to meet the statute of the Wilderness Act of 1964 and to ensure these congressionally designated areas meet DRECP conservation goals.

As shown in Table II.7-12, of the 4,431,000 acres of BLM LUPA conservation designations, 1,518,000 acres (34%) would be designated as Existing or Proposed ACEC, 2,227,000 acres (53%) would be Existing or Proposed ACEC or Wildlife Allocation and National Conservation Lands, 294,000 acres (7%) would be National Conservation Lands only, and 274,000 acres (6%) would be Wildlife Allocation.

Table II.7-12
Interagency Alternative 4 within the BLM LUPA

Alternative Components	Acreage[1]
DFAs	**258,000**
Study Area Lands	**579,000**
DRECP Variance Lands	579,000
DRECP Plan-Wide Reserve Design Envelope	**7,695,000**
Existing conservation areas	3,260,000
BLM LUPA conservation designations	4,431,000
Urban Areas, Other Lands, and Undesignated Areas	**1,302,000**
Impervious and Urban Built-up Land	62,000

Table II.7-12
Interagency Alternative 4 within the BLM LUPA

Alternative Components	Acreage[1]
BLM Open OHV Areas	235,000
Imperial Sand Dunes, including the BLM Open OHV Area	127,000
Johnson Valley OHV Shared Use Area	54,000
Undesignated Areas	823,000
Total	**9,834,000**

Notes: BLM LUPA conservation designations include NLCS lands, ACECs, and Wildlife Allocations. Overlaps of BLM LUPA conservation designations with existing conservation areas are reported in the existing conservation area acreages. The BLM LUPA would also designate approximately 2,489,000 acres of SRMAs on BLM-administered lands in addition to the 193,000 acres of existing SRMAs on BLM-administered lands, which are BLM designation overlays that overlap portions of the components provided in this table. Impervious and urban built-up lands occur within BLM LUPA conservation designations and DFAs were not explicitly included in the urban category reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[1] Acreages reported are on BLM-administered lands only within the BLM LUPA area.

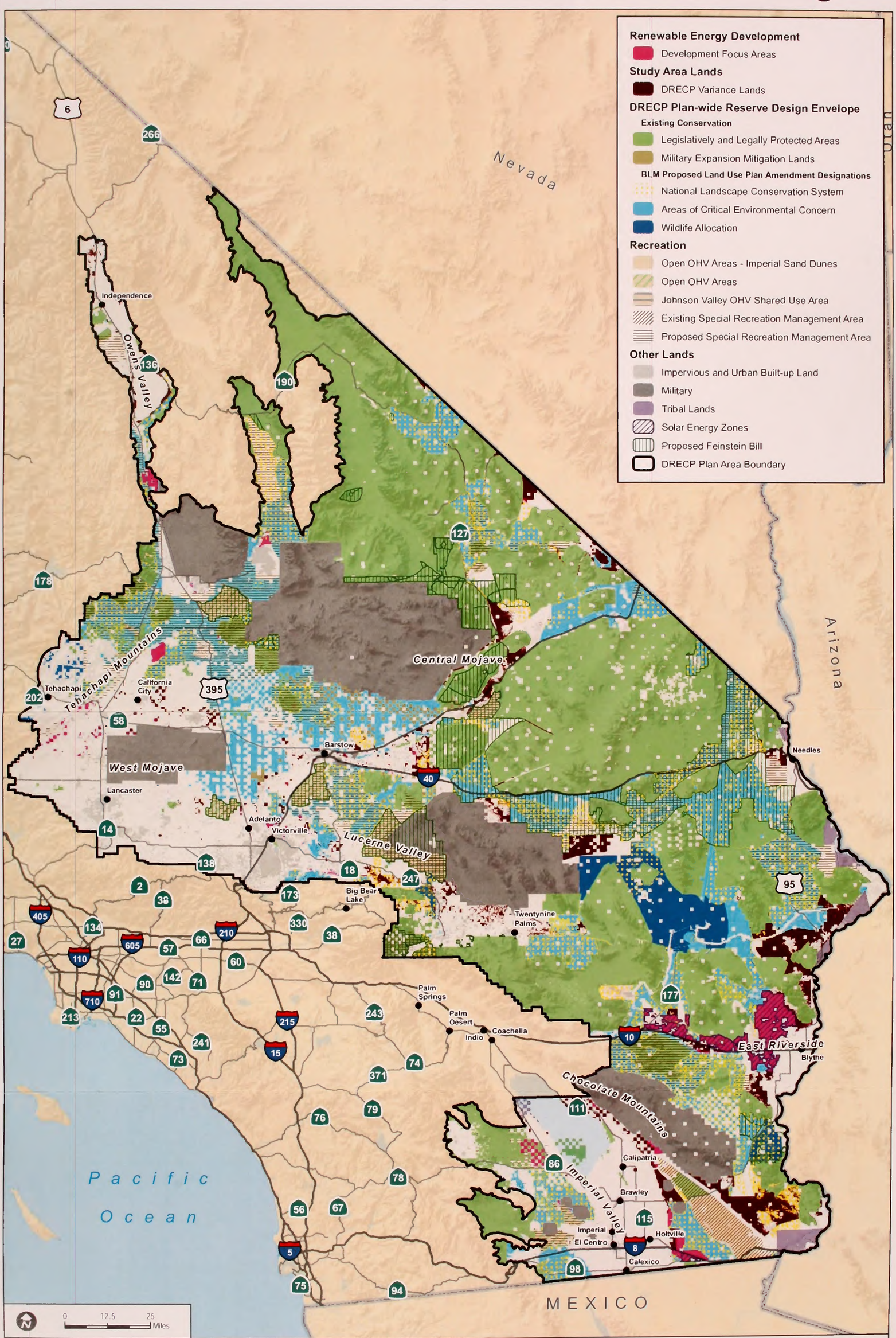
Table II.7-13
Alternative 4 BLM LUPA Conservation Designations within the BLM LUPA

BLM LUPA Conservation Designation	Acreage[1, 2]
NLCS	294,000
NLCS (and Existing ACEC)	1,282,000
NLCS (and Proposed ACEC)	945,000
NLCS (and Wildlife Allocation)	118,000
Existing ACEC	399,000
Proposed ACEC	1,119,000
Wildlife Allocation	274,000
Total	**4,431,000**

Notes:

[1] Acreages reported are on BLM-administered lands only within the BLM LUPA area.

[2] Approximately 821,000 acres of BLM LUPA conservation designations on BLM-administered lands occur within existing conservation areas. These overlapping acres are not reported in this table.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.7-4

Alternative 4 - BLM LUPA

INTENTIONALLY LEFT BLANK

In addition to the proposed BLM LUPA conservation designations, this alternative includes proposed BLM LUPA SRMAs, as shown in Table II.7-14. Unlike the Preferred Alternative, Alternative 4 would not designate any Extensive Recreation Management Areas (ERMA).

Table II.7-14
Alternative 4 Special Recreation Management Areas and Extensive Recreation Management Areas Within the BLM LUPA

SRMA/ERMA	Total Acreage[1]
Existing SRMA	193,000
Proposed SRMA	2,489,000
Proposed ERMA	—
Total	**2,682,000**

Notes: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[1] Acreages reported are on BLM-administered lands only within the BLM LUPA area.

The proposed BLM LUPA would not modify existing energy corridors, including "corridors of concern" defined in the Section 368 Energy Corridors settlement agreement described in Section I.2.1.7.7.

II.7.2.1 BLM Renewable Energy Policies

The BLM Renewable Energy Policies would be the same as in the Preferred Alternative.

II.7.2.2 BLM Conservation Areas

II.7.2.2.1 National Conservation Lands

This alternative responds to the direction of the Solar Programmatic Environmental Impact Statement (PEIS). No National Conservation Lands would be included within existing transmission corridors or variance lands identified in the Solar PEIS Record of Decision. The use allocations of this alternative allow for a variety of uses as long as they can be managed to be compatible with protecting National Conservation Land values.

This alternative would designate 2,671,000 acres as components of the National Conservation Lands on BLM-administered lands, which includes 821,000 acres within existing conservation areas (LLPAs and MEMLs) and 1,850,000 acres as part of the BLM LUPA conservation designations.

II.7.2.2.1.1 Management of National Conservation Areas

1. Planning Area-Wide National Conservation Land Management Direction

Like the Preferred Alternative, the use allocations for the National Conservation Lands in the California Desert Conservation Area (CDCA) are the allowable uses that would apply to all National Conservation Lands within the CDCA. The following list provides the use allocations for the Preferred Alternative. For resources where there are no specific use allocations for National Conservation Lands, Plan-wide rules would apply unless otherwise specified in the Special Unit Management Plans (Appendix L).

- **Comprehensive Trails and Travel Management.** National Conservation Lands would be designated in accordance to the appropriate Trails and Travel Management Plan (TTMP)/Resource Management Plan (RMP), and future travel management planning will put the emphasis of travel allowed on designated routes that provide for enjoyment of values, or necessary administrative access to conserve, protect, and restore area values
- **Cultural Resources.** Any adverse effects to historic properties resulting from allowable uses will be addressed through the Section 106 process of the National Historic Preservation Act and the implementing regulations at 36 Code of Federal Regulations (CFR) Part 800. Resolution of adverse effects will in part be addressed via compensatory mitigation that includes either protection of resources of importance to tribes or acquisition of comparable sites into public ownership similar to those that are going to be destroyed.
- Lands and Realty
  - Rights-of-Way
    - **Sites Authorizations.** National Conservation Lands would be avoidance areas. Authorization for site ROWs that would impact the values for which National Conservation Lands are designated must include mitigation/compensation resulting in a net-benefit to the National Conservation Land unit so that the restoration intent of National Conservation Land management is met. Site authorizations that protect or enhance conservation values, such as those granted as compensatory mitigation for Covered Activities within DFAs or for habitat restoration, would be allowed.
    - **Renewable Energy Generation.** National Conservation Lands would be exclusion areas for renewable energy ROWs.
    - **Linear ROWs**. National Conservation Lands would be avoidance areas for linear ROWs.

- **Land Tenure**
  - Exchange, purchase, or donation of lands would be permitted only to acquire non-BLM lands within the National Conservation Lands unit. Disposal of lands within National Conservation Land units would not be permitted.
  - National Conservation Lands inholdings would be a priority for acquisition from willing sellers. All inholdings would become part of the National Conservation Lands unit upon acquisition and be subject to associated management requirements.

- Minerals
  - Locatable Minerals
    - For the purposes of locatable minerals, National Conservation Lands would be treated as "controlled" or "limited" use areas in the CDCA, requiring a Plan of Operations for greater than casual use under 43 CFR 3809.11.
    - The BLM would develop priority list of subareas for potential withdrawal.
    - Initiate segregation of one subregion annually and complete mineral withdrawal review process (within 2-year time frame for each subregion).
    - **Saleable Minerals.** National Conservation Lands would be available for saleable mineral development. Mitigation/compensation must result in net benefit to the National Conservation Lands unit.
    - **Leasable Minerals.** National Conservation Lands may be available for geothermal leasing; however, these lands may only be offered for lease with a special stipulation to protect the appropriate resources as defined in the 2008 PEIS for Geothermal Leasing in the Western United States (BLM and USFS 2008). Special stipulations which provide protections greater than the standard lease terms may include timing limitations, controlled surface use, or no surface occupancy lease stipulations. National Conservation Lands values must be protected or enhanced through mitigation/compensation.

- **Recreation and Visitor Services.** Competitive and Commercial Special Recreation Permits would be permitted in National Conservation Lands.
- **Water Resources.** Applications for water rights would be decided on a case-by-case basis to protect water dependent National Conservation Lands values.
- **Disturbance Caps.**[2] Development in National Conservation Lands would be limited to 1% of total authorized disturbance.

[2] Disturbance caps only apply to lands not already included under ACECs or Wildlife Allocation disturbance caps, as described in the Special Unit Management Plans in Appendix L.

2. **National Conservation Land Subareas — Description of Values to be Protected**

   The values protected in the National Conservation Lands are described below. This alternative excludes existing utility corridors from National Conservation Lands. The focus of the National Conservation Lands would be to include critical habitat and habitat connectivity.

3. **Area-Specific National Conservation Land and Area of Critical Environmental Concern Management Prescriptions**

   Similar to the Preferred Alternative, there is overlap with the ACEC designations, and management for individual units is described in the Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L.

II.7.2.2.1.2 Subarea Descriptions

Basin and Range

Ecological Values

Ecological values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include nearly all of the ecological values described for the Preferred Alternative.
- A north–south strip of habitat through the center of the Pacific migratory bird flyway would not be included in National Conservation Lands.
- The flora and fauna of Fish Lake Valley, including the Joshua trees at the northernmost extent of their range, and the black toad habitat in Deep Springs Valley would not be included.

Cultural Values

Cultural values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include most of the cultural values described for the Preferred Alternative.
- The resources in the northernmost portion of the Plan Area in Fish Lake, Deep Springs, and Eureka valleys; the Rose Spring Site Complex.
- The majority of the Fossil Falls Archaeological District would not be included.

Scientific Values

Scientific values of National Conservation Lands in Alternative 4 would compare to those in the Preferred Alternative in a manner consistent with the differences in ecological and cultural values as described above.

Acreage

This alternative would include approximately 330,000 acres of National Conservation Lands in the Basin and Range subarea.

Coachella Valley

Ecological Values

Ecological values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass nearly all of the ecological values described for the Preferred Alternative.
- Inclusion of the noncontiguous public lands parcels of the Willow Hole–Edom Hill Preserve adds mesquite hummocks, a fan palm oasis, Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*), Little San Bernardino Mountains linanthus (*Linanthus maculatus*), Palm Springs round-tailed ground squirrel (*Spermophilus tereticaudus chlorus*), Palm Springs pocket mouse (*Perognathus longimembris bangsi*), burrowing owl (*Athene cunicularia*), Coachella giant sand treader cricket (*Macrobaenetes valgum*), least Bell's vireo (*Vireo belli pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-breasted chat (*Icteria virens*), yellow warbler (*Dendroica petechial*), and additional critical habitat for the Coachella Valley fringe-toed lizard (*Uma inornata*).
- National Conservation Lands in the transition zone between Mojave and Sonoran deserts, connecting the Mecca Hills and Orocopia Mountains Wilderness to the southern boundary of Joshua Tree National Park, would be included. These would be less extensive than in the Preferred Alternative.
- The Dos Palmas Preserve, with its riparian values, endangered desert pupfish (*Cyprinodon macularius*) and Yuma clapper rail (*Rallus longirostris yumanensis*), would not be included in National Conservation Lands.

Cultural Values

Cultural values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands in this alternative would encompass most of the cultural values described for the Preferred Alternative, including numerous significant prehistoric sites, sacred sites and landscape features of importance to Cahuilla culture, and historic structures and other features from early European American settlement.
- The cultural resources of Dos Palmas Preserve, including ancient habitation sites on the shoreline of ancient Lake Cahuilla, are not included in National Conservation Lands under this alternative.

Scientific Values

Scientific values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 55,000 acres of National Conservation Lands in the Coachella Valley subarea.

Colorado Desert

Ecological Values

Ecological values of National Conservation Lands in Alternative 4 would compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the ecological values described for the Preferred Alternative.
- BLM lands in the Eagle Mountains would be added as National Conservation Lands, encompassing areas of habitat connectivity between parts of Joshua Tree National Park on its east side. Part of the area of habitat connectivity linking Joshua Tree National Park and Palen McCoy Wilderness would also be added.
- National Conservation Lands do not encompass areas of habitat connectivity at the interface of the Mojave and Sonoran deserts through the Orocopia Mountains and Chuckwalla Mountains wildernesses on the south and Joshua Tree National Park to the north; between the Mule Mountains ACEC and the Palo Verde Mountains

Wilderness; between Indian Pass/Pichaco Peak and Little Pichaco Wildernesses; or between the Riverside Mountains, Big Maria Mountains and Rice Valley Wildernesses. Cadiz Valley, Chuckwalla ACEC Extension, Chuckwalla to Chemehuevi tortoise linkage, McCoy Valley, McCoy Wash, Mule-McCoy, Picacho, Palen Ford, and Turtle Mountains Corridor are not included as National Conservation Lands.

- National Conservation Lands would include less underground bat habitat in the southeast part of the subarea and none in the northeast.
- Less extensive areas of dune habitats at Palen Lake and Pinto Wash would be included.

Cultural Values

Cultural values of National Conservation Lands in Alternative 4 would compare to the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the cultural values of the Preferred Alternative.
- A slightly less extensive area of scenic values in northern Palen Valley would be included.
- Alligator Rock and Indian Pass would be partially included.
- Mule Mountains would not be included. Camp Young and Iron Mountain World War II Desert Training Centers not would be included.

Scientific Values

Scientific values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological values described above.

Acreage

This alternative would include approximately 580,000 acres of National Conservation Lands in the Colorado Desert subarea.

Kingston–Amargosa

Ecological Values

Ecological values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass nearly all of the ecological values described for the Preferred Alternative, including ecological values associated with the Amargosa River and Silurian Valley.

- Corridors important for maintaining genetic connectivity for desert tortoise and desert bighorn sheep would be less extensive in the Shadow Valley area.

Cultural Values

Cultural values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands in this alternative would encompass most of the cultural values described for the Preferred Alternative.
- A less extensive area in the Silurian Valley would be included.
- All cultural sites at Shadow Valley would be excluded from National Conservation Lands. No areas associated with historic mining in either valley are included.

Scientific Values

Scientific values of National Conservation Lands in Alternative 4 relating to ecological and cultural values correspond with those values included under this alternative, as described above.

Acreage

This alternative would include approximately 348,000 acres of National Conservation Lands in the Kingston–Amargosa subarea.

Lake Cahuilla

Ecological Values

Ecological values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- Most of the ecological values described for the Preferred Alternative would be included in this alternative.
- Flat-tailed horned lizard (*Phrynosoma mcallii*) habitat would be included in the National Conservation Lands. The area included would be less extensive, particularly on the west side of the valley where Ocotillo ACEC and Lake Cahuilla ACEC Expansion would not be included. Lake Cahuilla shoreline lands would be less extensive than in the Preferred Alternative.
- National Conservation Lands would encompass areas of wildlife habitat connectivity. These areas would be less extensive around the Chocolate and Cargo

Muchacho mountains; and between Anza–Borrego Desert State Park and BLM conservation lands, where areas of scenic values would also be less extensive.

Cultural Values

Cultural values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- Most of the cultural values described for the Preferred Alternative would be included in this alternative.
- National Conservation Lands would encompass a portion of Lake Cahuilla and its collection of important archaeological sites. The area included would be less extensive. One segment of Lake Cahuilla shoreline (Lake Cahuilla ACEC Expansion) on the west side of the valley would not be included, while segments on the east side would be less extensive.
- The National Conservation Lands in this alternative would not include the National Register-eligible Singer Geoglyphs, the historic Tumco area, or most of the Ocotillo area.

Scientific Values

Scientific values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 259,000 acres of National Conservation Lands in the Lake Cahuilla subarea.

Mojave and Silurian Valley

Ecological Values

Ecological values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass the ecological values of Coolgardie Mesa and most of the north end of the Ord–Rodman ACEC as described for the Preferred Alternative. It would encompass the values of the Superior–Cronese ACEC as described, except that it would not include populations of Parish's phacelia (*Phrynosoma mcallii*).

- National Conservation Lands would not encompass Mojave fringe-toed lizard (*Uma scoparia*) habitat; the riparian habitat of Salt Creek Hills; or populations of Parish's phacelia in the vicinity of Coyote Lake.
- Areas of habitat connectivity encompassed by National Conservation Lands are between Grass Valley and Golden Valley Wilderness areas and between Kingston Range Wilderness and Death Valley National Park, along with some of the habitat connectivity associated with the Silurian Valley. The Mojave National Preserve and Death Valley National Park would not be connected by BLM wildernesses and National Conservation Lands, and habitat linkages between Rodman Mountains Wilderness and the Cady Mountains Wilderness Study Area (outside the subarea) would not be encompassed by National Conservation Lands.
- The western portion of Afton Canyon, with its riparian woodlands, plant and bird communities would not be included in National Conservation Lands.

Cultural Values

Cultural values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass the same areas associated with the Mojave Road as in the Preferred Alternative.
- A slightly greater area around Calico Early Man Site would be included.
- The area around Black Mountain Wilderness included in National Conservation Lands would be slightly less extensive than in the Preferred Alternative. Associated cultural values, including Inscription Canyon, are the same as described for the Preferred Alternative.
- National Conservation Lands would encompass about half of the area of Afton Canyon included in the Preferred Alternative, with cultural values included proportionally.
- Neither Silurian Valley nor the Silurian Valley corridor would be included as National Conservation Lands. No segments of the Old Spanish National Historic Trail,[3] Tonopah and Tidewater Railroad, or Boulder Transmission Line would be included.

[3] Although not included in the National Conservation Lands designated under Public Law 111-11, the Old Spanish Historic Trail remains a part of the NLCS as a National Historic Trail. Section II.7.2.2.2 discusses the National Historic Trail Management Corridor for this alternative.

Scientific Values

Scientific values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- Scientific values associated with ecological and cultural values would differ in a manner corresponding with the differences in values described above.
- National Conservation Lands would include the paleontological values of Rainbow Basin, and not those of the Manix area.

Acreage

This alternative includes approximately 153,000 acres of National Conservation Lands in the Mojave and Silurian Valley subarea.

Pinto, Lucerne Valley, and Eastern Slopes

Ecological Values

Ecological values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Land would encompass most of the ecological values described for the Preferred Alternative.
- The Bendire's Thrasher and Mojave Fishhook Cactus ACECs are added to National Conservation Lands in this alternative.
- National Conservation Lands would include part of the Pipes Canyon Huge Joshua Trees Unusual Plant Assemblage; and Juniper Flats, with its Coast horned lizard (*Phrynosoma coronatum*) and gray vireo (*Vireo vicinior*) habitats.

Cultural Values

Cultural values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Land would encompass most of the cultural values described for the Preferred Alternative.
- Cultural values associated with Juniper Flats would be represented on National Conservation Lands. These would be less extensive than in the Preferred Alternative.

Scientific Values

Scientific values of National Conservation Lands in Alternative 4 would compare to those in the Preferred Alternative in a manner corresponding with changes in ecological and cultural values represented on these lands, as described above.

Acreage

This alternative would include approximately 281,000 acres of National Conservation Lands in the Pinto, Lucerne Valley, and Eastern Slopes subarea.

Piute Valley and Sacramento Mountains

Ecological Values

Ecological values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the ecological values described for the Preferred Alternative, including habitat for desert tortoise and other declining and sensitive animal and plant species.
- National Conservation Lands would include the following, with less extensive acreage: the values of Chemehuevi Valley, including Chemehuevi Wash and teddybear cholla (*Cylindropuntia bigelovii*) stands; Piute–Fenner and Chemehuevi ACECs; the values of the Sacramento Mountains, including bat colonies and teddybear cholla stands; rare plant populations; Homer Wash and other parts of Ward Valley.
- National Conservation Lands would include areas of habitat connectivity important to bighorn sheep between the Stepladder Mountains, Turtle Mountains and Whipple Mountains Wildernesses. Connections between other designated Wilderness Areas would not be included.

Cultural Values

Cultural values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the cultural values described for the Preferred Alternative.
- Segments of the Mojave Trail, Old Spanish National Historic Trail, East Mojave Heritage Trail, and historic Route 66, and some World War II Desert Training Center

sites, including part of Camp Ibis, would be included as National Conservation Lands. These would be slightly less extensive than in the Preferred Alternative.

- Some prominent cultural resources in the vicinity of Needles would not be included in National Conservation Lands.

Scientific Values

Scientific values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 318,000 acres of National Conservation Lands in the Piute Valley and Sacramento Mountains subarea.

South Mojave–Amboy

Ecological Values

Ecological values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the ecological values described for the Preferred Alternative.
- The Dale Lake habitat for Mojave fringed-toed lizard, and the area around Dale Lake connecting Cleghorn Lakes Wilderness, Sheephole Valley Wilderness and the Pinto Mountain ACEC, would be added to National Conservation Lands in this alternative.
- National Conservation Lands would encompass areas of desert tortoise and bighorn sheep habitat connectivity between the Kelso Dunes Wilderness and the Cady Mountains Wilderness Study Area. Areas of connectivity not included in this alternative are between the Ord–Rodman ACEC and the Chemehuevi ACEC; between the Marble Mountains and the Mojave National Preserve; between the Piute Mountains Wilderness and the Old Woman Mountains Wilderness; and between the latter two wildernesses and the Bigelow Cholla Garden Wilderness and Stepladder Mountains Wilderness in the adjacent subarea to the east.
- Part of the Pisgah area is included in National Conservation Lands. This area is less extensive than in the Preferred Alternative.

- Populations of rare plants would be included in National Conservation Lands. These areas would be less extensive for some plants, particularly white-margined beardtongue (*Penstemon albomarginatus*).
- Bonanza Spring would not be included in National Conservation Lands.

Cultural Values

Cultural values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass most of the cultural values described for the Preferred Alternative.
- Part of the historic Route 66 corridor; historic Atchinson, Topeka and Santa Fe railroad; and proposed Mojave Trails National Monument would be included. The portions included would be less extensive than in the Preferred Alternative.
- The following would not be included in National Conservation Lands: Bonanza Spring, the Tonopah and Tidewater railroad grade, and lands adjacent to the Cady Mountains WSA.

Scientific Values

Scientific values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 404,000 acres of National Conservation Lands in the South Mojave–Amboy subarea.

Western Desert and Eastern Slope

Ecological Values

Ecological values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would encompass ecological values described for the Preferred Alternative except as noted below.
- National Conservation Lands would include slightly less extensive areas of burrowing owl and Townsend's big-eared bat (*Corynorhinus townsendii*) habitats.
- National Conservation Lands would encompass much less extensive areas of Tehachapi slender salamander (*Batrachoseps stebbinsi*) and rare plant habitat in the

Piute Mountains; and of the migratory bird flyway at the north end of the subarea along the eastern flank of the Sierra Nevada.

- National Conservation Lands would partially include, but would not link, the El Paso–Kiavah areas.

Cultural Values

Cultural values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative as follows:

- National Conservation Lands would include most of the cultural values described for the Preferred Alternative.
- National Conservation Lands would include the following, with less extensive areas than in the Preferred Alternative: the Last Chance Canyon National Register Archaeological District (a small portion would not be included); lands on the southwest side of the Black Mountain Wilderness; and some additional areas and others omitted, with less overall, in the Jawbone–Butterbredt area.
- National Conservation Lands would not encompass cultural resources between the Highway 395 corridor and the Eastern Sierra front relating to prehistoric trade and transportation routes and patterns of mobility.

Scientific Values

Scientific values of National Conservation Lands in Alternative 4 compare to those in the Preferred Alternative in a manner corresponding with the differences in ecological and cultural values described above.

Acreage

This alternative would include approximately 166,000 acres of National Conservation Lands in the Western Desert and Eastern Slope subarea.

II.7.2.2.2 National Trails

II.7.2.2.2.1 National Scenic and Historic Trails

Goals and Objectives

Goals and objectives for National Scenic and Historic Trails (NSHT) would be the same as the Preferred Alternative.

Conservation and Management Actions for the Pacific Crest National Scenic Trail, and the Juan Bautista de Anza and Old Spanish National Historic Trails Management Corridors

- **Management Corridor Width**. Establish a National Trail Management Corridor, width generally 1 mile from centerline of the trail.
- **Management of Trail Corridors.** Manage National Trails as components of the BLM's National Landscape Conservation System. Where National Trails overlap other National Conservation Lands, the more protective CMAs or land use allocations will apply. Within these areas, the BLM will support the nature and purposes of the designated National Trails.
- **Lands and Realty**
  - **Rights-of-Way**
    - **Site Authorizations.** NSHT Management Corridors would be avoidance areas. Sites ROWs would require mitigation/compensation resulting in net benefit to the NSHT.
    - **Linear ROWs.** NSHT Management Corridors would be avoidance areas except in designated transmission corridors. Exclude cultural landscapes, high potential historic sites, and high potential route segments identified along national historic trails management corridors from transmission except in approved transmission corridors. Where development affects NSHT management corridors, an analysis must be performed to ensure that the development does not substantially interfere with the nature and purposes of the trail, and that mitigation/compensation results in a net benefit to the trail
    - **Renewable Energy ROWs.** Exclude cultural landscapes, high potential historic sites, and high potential route segments identified along national historic trails management corridors from transmission except in approved DFAs. Where development affects national scenic and historic trail management corridors, an analysis must be performed to ensure that the development does not substantially interfere with the nature and purposes of the trail, and that mitigation/compensation results in a net benefit to the trail.
  - **Land Tenure.** Exchange, purchase, donation would be permitted to acquire lands within NSHT. Disposal would be permitted if it results in net benefit to trail values through acquisition or other compensation. Lands within the National Trails Management Corridors would be retained.[4]

[4] See BLM Manual 6280, 4.2.E.5.i.e. The land use plan and associated NEPA analysis should consider the following management decisions for lands and realty decisions for National Trails: Retention of public lands within a National Trail Management Corridor in accordance with Section 203 of the Federal Land Management and Policy Act, as classified in accordance with 43 CFR 2420, and ensure public lands within the National Trail Management Corridor are not contained on Resource Management Plan disposal lists.

- Minerals
  - **Locatable Minerals.** For the purposes of locatable minerals, NSHT corridors would be treated as "controlled" or "limited" use areas in the CDCA, requiring a Plan of Operations for greater than casual use under 43 CFR 3809.11.
  - **Saleable Minerals.** NSHT Management Corridors would be available for saleable mineral development
  - **Leasable Minerals.** NSHT Management Corridors may be available for geothermal leasing; however, these lands may only be offered for lease with a special stipulation to protect the appropriate resources as defined in the 2008 PEIS for Geothermal Leasing in the Western United States (BLM and USFS 2008). Special stipulations which provide protections greater than the standard lease terms may include timing limitations, controlled surface use, or no surface occupancy lease stipulations. National Conservation Lands values must be protected or enhanced through mitigation/compensation.
- **Recreation and Visitor Services.** Competitive and Commercial Special Recreation Permits would be permitted if they do not substantially interfere with the nature and purposes of the NSHTs.
- **Cultural Resources.** Any adverse effects to historic properties resulting from allowable uses will be addressed through the Section 106 process of the National Historic Preservation Act and the implementing regulations at 36 CFR Part 800.

II.7.2.2.2.2 National Recreation Trails

Management for National Recreation Trails would be the same as under the Preferred Alternative.

II.7.2.2.3 Areas of Critical Environmental Concern

Alternative 4 would include 122 ACECs totaling approximately 4,555,000 acres (nonoverlapping ACEC acres) on BLM-administered lands (includes ACECs within Existing Protected Areas). Specific management and maps for ACECs under this alternative are included in the Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L.

II.7.2.2.4 Wildlife Allocations

This alternative would include 393,000 acres of Wildlife Allocations on BLM-administered lands (includes Wildlife Allocations within NLCS designations). Descriptions and maps are included in the Special Unit Management Plans (National Conservation Lands and ACEC) in Appendix L.

II.7.2.2.5 Special Recreation Management Areas

This alternative would include 28 SRMAs (2,682,000 acres on BLM-administered lands). Descriptions, maps, and management actions for each SRMA under this alternative are included in SRMA Management Plans in Appendix L.

II.7.2.2.6 Lands Managed to Protect Wilderness Characteristics

Under Alternative 4, none of the lands that were inventoried and found to have wilderness characteristics would be managed to protect these characteristics.

II.7.2.3 BLM-Specific CMAs

The following CMAs are different than the Preferred Alternative. For all other resources, see the Preferred Alternative, Section II.3.2.3.

II.7.2.3.1 Lands and Realty

Conservation and Management Actions for Lands and Realty would be the same as in the Preferred Alternative, except for Land Exchanges and Land Sales, as described below.

II.7.2.3.1.1 CMAs for the Entire Planning Area

- In nondesignated lands (i.e. lands not covered by the specific CMAs below), make lands available for disposal through exchange or land sale.

II.7.2.3.1.2 CMAs in Development Focus Areas and DRECP Study Areas

- Make lands within DFAs available for disposal by sale or exchange under Section 203(a)(1), 203(a)(3), 206 and 209 of the Federal Land Management and Policy Act.
- In DRECP Study Areas, make lands unavailable for exchange or disposal.

II.7.2.3.1.3 CMAs in National Conservation Lands

- Make available for exchange, purchase, or donation in accordance with the CMAs outlined for National Conservation Lands in Section II.7.2.2.1.1.
- Make unavailable for disposal.

II.7.2.3.1.4 CMAs in Areas of Critical Environmental Concern

- Acquire lands through exchange, purchase, or donation.
- Make lands unavailable for disposal.

II.7.2.3.1.5 CMAs in Wildlife Allocations

- Acquire lands through exchange, purchase, or donation.
- Make lands unavailable for disposal.

II.7.2.3.1.6 CMAs in Special Recreation Management Areas

- Acquire lands through exchange, purchase, or donation.
- Make lands unavailable for disposal.

II.7.2.3.2 Soil, Water, and Water-Dependent Resources

CMAs for soil, water, and water-dependent resources would be the same as in the preferred, except within DFAs, as described below.

II.7.2.3.2.1 CMAs in Development Focus Areas

- Limit disturbance of sensitive soil areas, so that no more than 20% of the sensitive soil areas within a proposed project footprint shall be disturbed for construction.
- Limit disturbance of sand dunes, so that no more than 5% of the sand dunes within a proposed project footprint shall be disturbed for construction.
- Limit disturbance of sand flow corridors, so that no more than 5% of the sand flow corridors within a proposed project footprint shall be disturbed for construction.
- Limit disturbance of desert pavement, so that no more than 5% of the desert pavement within a proposed project footprint shall be disturbed for construction.
- Avoid development in flood plain, unless such development can be mitigated.
    - Exceptions: Exceptions to any of these stipulations may be granted by the authorized officer if the operator submits a plan that demonstrates:
        - The impacts from the proposed action are temporary;
        - The impacts minimal or can be adequately mitigated; *and*
        - Critical resources, including threatened and endangered species, are fully protected.
    - Modifications: No modifications will be granted.
    - Waivers: No waivers will be granted.

II.7.2.3.3 Visual Resources Management

Figure II.7-5 shows Visual Resources Management Classes under this alternative. CMAs under this alternative would be the same as under the Preferred Alternative.

II.7.2.3.4 Wilderness Characteristics

- In addition to the CMAs listed in the Preferred Alternative, all lands identified for management to protect wilderness characteristics are closed to all mechanized and motorized transport.

II.7.2.4 CDCA Plan Amendments

II.7.2.4.1 Multiple-Use Classes

The amendments to the multiple-use classes would be the same as the Preferred Alternative.

II.7.2.4.2 Visual Resource Management Classes and National Conservation Lands Outside of the DRECP

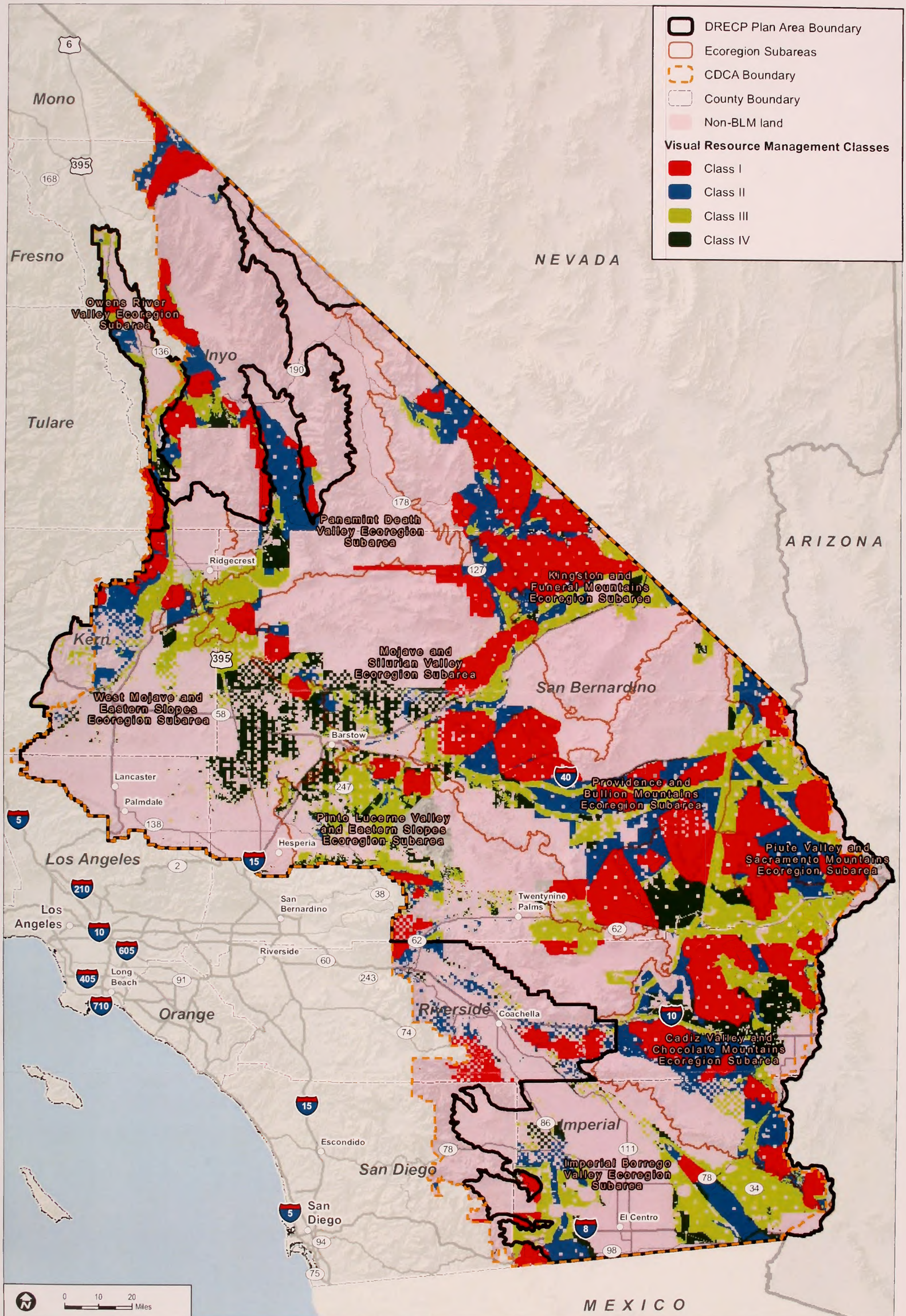
VRM Classes and National Conservation Land designations in the CDCA outside of the Planning Area are described in Section II.3.2.2.1 and Section II.3.2.3.12.

II.7.3 NCCP Elements of Alternative 4

The following provides an overview of the NCCP elements of Alternative 4. At the broadest level, the NCCP includes elements related to Covered Activities and conservation elements.

As described for the Preferred Alternative, each of the NCCP alternatives includes the full range of Covered Activities anticipated under the DRECP for each of the interagency Plan-wide alternatives. The Plan-wide description of Covered Activities serves as the description of Covered Activities for the NCCP alternatives.

The Natural Community Conservation Planning Act requires that NCCPs provide for the conservation and management of Covered Species and natural communities on a landscape or ecosystem level through the creation and long-term management of habitat reserves and the application of other equivalent conservation measures. To reflect the conservation that would occur under the NCCP, the NCCP elements of each alternative define the following means of providing conservation within the DRECP Plan-Wide Reserve Design Envelope: an NCCP Conceptual Plan-Wide Reserve Design, a DRECP NCCP Reserve Design, and other conservation actions.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.7-5

Alternative 4 - BLM Visual Resource Management Classes

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_II\figII.7-5.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

Reserve design features and other conservation actions within the NCCP alternatives are consistent with and nested within the DRECP Plan-Wide Reserve Design Envelope in the interagency Plan-wide alternatives, but differ in terms of how reserve design features are grouped within the NCCP Conceptual Plan-Wide Reserve Design and the DRECP NCCP Reserve Design. Table II.7-15 summarizes the NCCP elements of Alternative 4. As shown in Table II.7-15, the DRECP NCCP Reserve Design covers approximately 400,000 acres of BLM and non-BLM lands. Figure II.7-6 depicts the NCCP for Alternative 4. Refer to Appendix N for a description of how the Plan-wide description of the alternative serves as the description of the NCCP for the DRECP.

Table II.7-15
NCCP for Alternative 4

NCCP Components	Acreage
DFAs	**1,608,000**
Study Area Lands	**588,000**
DRECP Variance Lands	588,000
DRECP Plan-Wide Reserve Design Envelope	**14,478,000**
Existing conservation areas	7,662,000
NCCP Conceptual Plan-Wide Reserve Design	2,053,000
Inside the DRECP NCCP Reserve Design	400,000
BLM LUPA conservation designations	291,000
Biological Conservation Priority Areas on non-BLM lands	109,000
Outside the DRECP NCCP Reserve Design	1,653,000
BLM LUPA conservation designations	1,108,000
Biological Conservation Priority Areas on non-BLM lands	545,000
BLM LUPA conservation designations outside the NCCP Conceptual Plan-Wide Reserve Design	3,038,000
Biological Conservation Planning Areas on non-BLM lands	1,725,000
Urban Areas, Other Lands, and Undesignated Areas	**5,910,000**
Plan Area Total	**22,585,000**

Note: The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table

II.7.4 GCP Elements of Alternative 4

As described in Section II.3.4 for the Preferred Alternative, the DRECP's GCP elements include a streamlined permitting process for renewable energy development by nonfederal project proponents in the Plan Area. This section is intended to provide the description of the GCP elements of the DRECP for Alternative 4.

II.7.4.1 Overview of the Nonfederal GCP Lands of Alternative 4

The GCP component of Alternative 4 includes all nonfederal lands within the DRECP DFAs and Conservation Planning Areas, as well as nonfederal inholdings within existing conservation areas and BLM-administered lands in the Plan Area; these lands comprise the GCP Permit Area in the Plan Area. The larger GCP Plan Area encompasses the GCP Permit Area as well as Priority Conservation Areas outside the GCP Permit Area where permittee non-acquisition mitigation measures may be implemented (i.e., BLM-administered lands corresponding to the DRECP NCCP Reserve Design). Nonfederal lands include privately owned lands and lands owned by state and local jurisdictions. The conservation strategy and Covered Activities under the GCP would be consistent with the DRECP. Table II.7-16 provides a summary of Alternative 4 within the GCP component of the DRECP; Figure II.7-7 depicts Alternative 4 within the GCP area.

As shown in Table II.7-16, the GCP portion of the Plan Area covers a total of 1,332,000 acres of DFAs on nonfederal lands (83% of the total DFAs in Alternative 4). The biological resources environmental setting/affected environment for the GCP portion of the Plan Area is described in Section Volume III, III.7.11. The impact analysis for Alternative 4 on nonfederal lands within the GCP area is provided in Volume IV, Section IV.7.3.6.4.

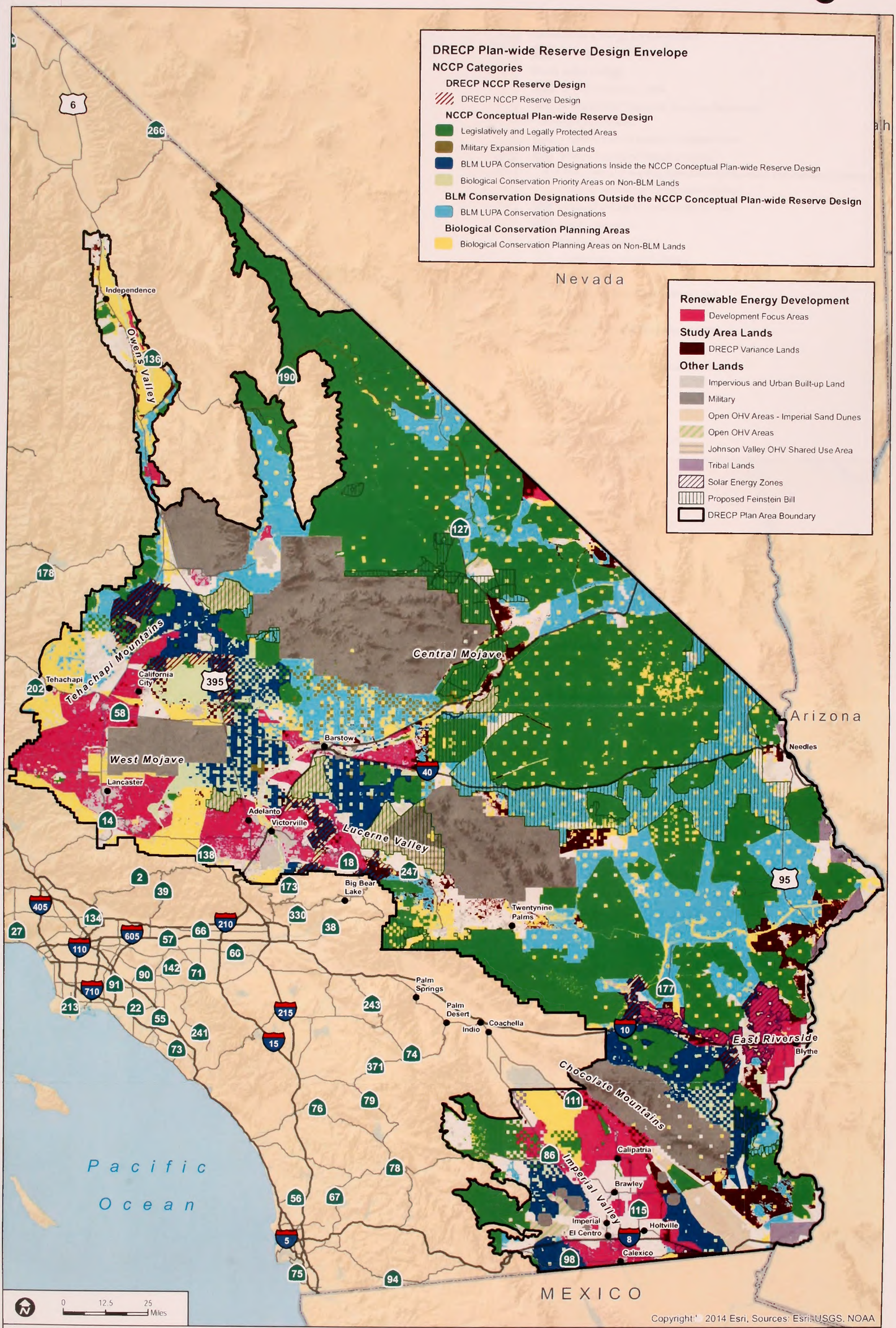
Table II.7-16
Alternative 4 within the GCP

Alternative Components	Acreage
DFAs (Nonfederal Lands Only)	**1,332,000**
Study Area Lands (Nonfederal Lands Only)	-
DRECP Plan-Wide Reserve Design Envelope (Nonfederal Lands Only)	**2,742,000**
Existing conservation areas	433,000
BLM LUPA conservation designations	1,160,000
Conservation Planning Areas	1,148,000

Notes: Urban areas, Other Lands, and Undesignated Areas also occur on nonfederal lands but are not reported here. The following general rounding rules were applied to acreage values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

II.7.4.2 Overview of the GCP Permitting Process

The GCP permitting process under Alternative 4 would be the same as is described for the Preferred Alternative in Section II.3.4.2 and in Appendix M.

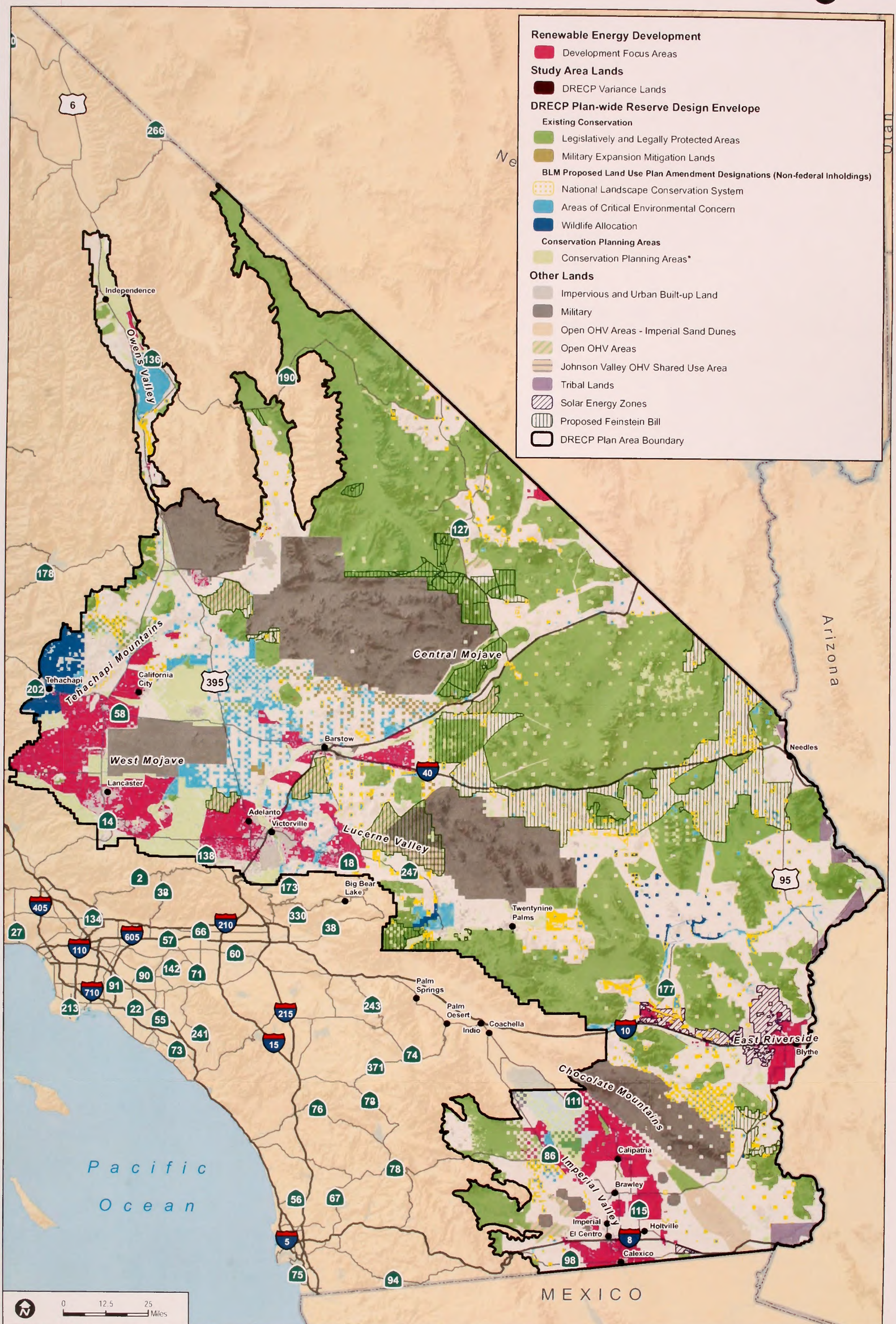


Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.7-6

Alternative 4 - Natural Community Conservation Plan

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

*The portion of the reserve design outside Existing Conservation Areas and BLM LUPA Conservation Designations on private and non-BLM public lands from which reserve areas will be assembled from willing sellers as compensation for Covered Activities.

FIGURE II.7-7

Alternative 4 - General Conservation Plan

INTENTIONALLY LEFT BLANK

II.8 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

Throughout the planning phase of the Draft DRECP and EIR/EIS, agencies and stakeholders suggested and refined a number of reserve design and renewable energy development alternatives. Alternatives were also identified during the public scoping process. The BLM first published a Notice of Intent (NOI) under the National Environmental Policy Act (NEPA) to prepare an EIS for the DRECP and LUPA on November 20, 2009 in the Federal Register (see Volume V for more information on the scoping process). The BLM and USFWS as co-lead agencies published a NOI to prepare an EIS for their respective proposed actions in the Federal Register on July 29, 2011; a Notice of Preparation (NOP) for an EIR under the California Environmental Quality Act (CEQA) was published on the same date. The public comment period ended on September 12, 2011. The BLM published a Notice of Amendment to the NOI in the Federal Register on April 4, 2012, to initiate scoping for possible amendments of Resource Management Plans under the California Desert Conservation Area Plan in the DRECP Plan Area. The purpose of the public scoping periods was to receive comments, suggestions, and other information regarding the scope of issues and alternatives to be addressed in the Draft EIR/EIS and amendments to the BLM Resource Management Plans. Scoping comments regarding alternatives are summarized below. (A more complete summary of scoping comments is included in the Draft DRECP and EIR/EIS Scoping Report (Appendix T).[1]

As part of the scoping process, commenters suggested that:

- The EIR/EIS should describe the development of each alternative, how it addresses the project's objectives and implementation, and should include a discussion of the different types of renewable energy technologies that may be developed (Comment 1-2A).
- The EIR/EIS should identify areas with potential use conflicts and make specific recommendations for reducing conflict (Comment 1-3A).
- Alternatives analyses under Section 404[2] of the Clean Water Act vary from analyses under NEPA and must include both on-site and off-site alternatives, which may include private land, BLM-administered land, and/or disturbed sites (Comment 1-20A).

---

1 Information regarding the Draft DRECP and EIR/EIS scoping is available at: http://www.drecp.org/nepaceqa/ or see Appendix T, Scoping Report.

2 Section 404 of the Clean Water Act establishes a program to regulate the discharge of dredged or fill material into waters of the United States. The program is jointly administered by the U.S. Army Corps of Engineers and the Environmental Protection Agency. The fundamental rationale of the program is that no discharge of dredged or fill material should be permitted if there is a practicable alternative that would be less damaging to our aquatic resources or if significant degradation would occur to the nation's waters. Permit review and issuance follows a sequence process that encourages avoidance of impacts, followed by minimizing impacts and, finally, requiring mitigation for unavoidable impacts to the aquatic environment.

- Preferred alternatives (in both draft and final form) should include detailed maps showing closures, restrictions, and the conservation status of all areas in DRECP planning areas, and disclose known and planned mitigation areas (Comment 11-4A).
- Proposed actions should continue to authorize, maintain, and enhance the recreational use of land in the DRECP Planning Area (Comment 14-3A).
- The EIR/EIS should plan for a wide range of realistic desert renewable energy development scenarios through 2050 (Comment 18-5A).
- The NOI does not include a possible range of alternatives. Phasing renewable energy development at different scales, different levels of development, and setting different levels of energy need and a low-impact alternative is recommended (Comment 20-10A).
- Alternatives in the NOP/NOI should be modified (Comment 21-2A).
- An alternative is needed that considers less use of energy (renewable or otherwise) within both regional and No Action areas (Comment 22-11A).
- The DRECP should be conservation driven with various alternatives formulated around a range of conservation opportunities or alternatives (Comment 23-1A).
- Alternatives should consider opportunities for energy conservation and small-scale generation facilities near cities and towns in the California Desert Conservation Area (CDCA), including rooftop solar panels and distributed generation at the site of energy consumption (Comment 20-18PD; Comment 10-2A, 22-12A, 25-20A; Comment 31-1A; Comment 33-3A).
- The DRECP boundary should be expanded to include a greater portion of San Diego County (Comment 19-1A).
- DRECP Planning Area should include the western end of Antelope Valley in Los Angeles and Kern counties (Comment 20-19A).
- Areas that should be avoided include those that support a high density of wintering or migratory birds, contain high raptor activity or breeding, and wintering of migrating populations of less abundant species. Avoid the take of eagles and areas that overlap with the California condor (Comment 1-26A; Comment 1-36BR; Comment 18-2A).
- The DRECP should preserve as much of Priority Wind Resource areas as possible (Comment 18-1A).
- The EIR/EIS should consider the potential conservation and development of military lands, other federal lands, and state lands to expand development and conservation opportunities (Comment 24-3A).

- The DRECP should exclude regional linkages identified for the town of Apple Valley (Comment 27-1a).
- The DRECP should steer development onto previously disturbed and private lands (Comment 1-6A and 25-11A; Comment 35-1A; Comment 36-4A).
- The DRECP should seek opportunities to develop portions of Imperial Valley and eastern Riverside (Comment 23-5A).
- The DRECP should avoid development at Ord Mountain Allotment (Comment 38-1A).

On December 17, 2012 the REAT agencies published an interim document entitled the *Description and Comparative Evaluation of Draft DRECP Alternatives*[3] to provide stakeholders and the public a chance to review and provide feedback on plan alternatives. The public provided additional comments on alternatives that were considered but not advanced for further analysis. Multiple commenters noted that distributed generation, energy efficiency, and the siting of renewable energy on brownfield sites should be considered as components of a single alternative rather than as independent alternatives, see Section II.8.2.1. The Imperial Irrigation District (IID) suggested using the exposed playa areas near the Salton Sea for renewable energy development.

Many environmental groups[4] noted that previous Sierra Club comments regarding the Energy Commission Acreage Calculator were not meant to be an alternative, but rather that the Sierra Club comments should serve to revise the energy calculator to adjust the amount of renewable energy analyzed for development in the DRECP Plan Area for all EIR/EIS alternatives. In response to this comment, the "Sierra Club Alternative" presented in the *Description and Comparative Evaluation of the Draft DRECP Alternatives* is not included in this Draft DRECP and EIR/EIS.[5] As noted in Volume I, Section I.1.4, the State Objectives include planning for approximately 20,000 MW of renewable energy in the Plan Area by 2040. An alternative with less than approximately 20,000 MW would not meet this primary objective. The Energy Commission Acreage Calculator is discussed in Appendix F3 of the Draft DRECP and EIR/EIS and was discussed in depth throughout the DRECP planning process.[6]

---

3 Available at: http://www.drecp.org/documents/docs/alternatives_eval/index.php.

4 These environmental groups include: Defenders of Wildlife, Audubon California, California Native Plant Society, Center for Biological Diversity, Natural Resources Defense Council, Sierra Club and the Wilderness Society.

5 The Sierra Club Alternative can be reviewed in the "Description and Comparative Evaluation of the Draft DRECP Alternatives" Section 2.10.2.5, pg. 2.10-13, available at: http://www.drecp.org/documents/docs/alternatives_eval/Section_2_Description_of_Alternatives.pdf.

6 See DRECP website, http://www.drecp.org/documents/resources.html Renewable Energy Acreage Calculator by the California Energy Commission (dated July 12, 2012).

Some of the alternatives suggested in the DRECP Scoping Report and in other agency and stakeholder comments were generally incorporated into the alternatives considered in Chapters II.2 through II.7 (including the No Action Alternative, the Preferred Alternative, and four other alternatives). For example, an overlay of Development Focus Areas (DFAs) on agency-identified low-resource conflict areas has been incorporated in all the alternatives. Existing, approved projects were considered in setting the MW and acreage targets, but were not used to create a separate alternative. (See Section I.3.5 for the description of the renewable energy planning process and the estimated future generation capacity required in the Plan Area.) Another scoping recommendation was to site development within one mile of both existing or planned high-voltage lines and substations; all alternatives include DFAs near existing transmission lines.

Other alternatives suggested in public comments were either not described in sufficient detail to be considered or were outside of the scope of the DRECP, which is to provide for the long-term conservation and management of Covered Species in the Plan Area and to provide a streamlined approval process for renewable energy projects within the Plan Area. Examples include an energy efficiency-only alternative, an alternative that would incorporate more of San Diego County in the DRECP planning area boundary, an alternative that would include renewable energy development on military lands, and an alternative that would avoid development at the BLM-administered Ord Mountain Allotment for livestock grazing near Barstow.

Alternatives suggested by public comments were considered by the REAT agencies. Suggested alternatives that were not incorporated into one or more of the action alternatives are described below, along with the rationales for not incorporating them in alternatives evaluated in this document.

II.8.1 Context for Alternatives Considered but Not Carried Forward for Detailed Analysis

NEPA and CEQA define categories of alternatives to be considered but not analyzed in detail. Relevant sections of these laws are summarized in Sections II.8.1.1 and II.8.1.2.

Alternatives evaluated in detail in the Draft DRECP and EIR/EIS must meet the objectives, REAT agencies' purposes and needs, and the regulatory framework described in Volume I. The BLM's and USFWS' statements of purpose and need and the CEC's, CDFW's, and CSLC's objectives set the context for the development and analysis of alternative scenarios. Alternatives that do not meet most of the agencies' basic purposes for the DRECP, as expressed in these statements, or that duplicate features already included in alternatives carried forward for detailed analysis in the DRECP, will not be analyzed in full detail.

II.8.1.1 NEPA Requirements for Alternatives

According to the Council on Environmental Quality's (CEQ's) NEPA regulations (40 C.F.R. 1500.1 et seq.), an EIS must present the environmental impacts of a proposed action and alternatives in a comparative form that defines the issues and provides a clear basis for choice by both decision makers and the public (40 C.F.R. 1502.14). The alternatives section in an EIS should also rigorously explore and objectively evaluate all reasonable alternatives. For alternatives that were eliminated from detailed study, the EIS should also briefly discuss the reasons for their elimination. In addition, alternatives should be evaluated in the context of the underlying purpose and need to which the agency is responding in proposing the alternatives, including the proposed action (i.e., DRECP Preferred Action) (40 CFR 1502.13; also see Volume I, Chapter I.1).

Consistent with CEQ's NEPA regulations regarding an action agency's purpose and need (40 C.F.R. 1502.13) the alternatives below were not carried forward for additional analysis. These alternatives did not meet the purpose and need of either federal co-lead agency (BLM and USFWS) (see Volume I, Chapter I.1) or were determined to be practically or technically infeasible (40 C.F.R. 1502.14).

II.8.1.2 CEQA Requirements for Alternatives

An important aspect of EIR preparation is the identification and assessment of reasonable alternatives that would avoid or substantially lessen the significant impacts of a proposed project. The CEQA guidelines require consideration of a range of reasonable alternatives but do not require an agency to consider every conceivable alternative to a project (Section 15126.6 (a)). The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify alternatives that were considered by the lead agency but rejected from detailed analysis and briefly explain the reasons underlying the lead agency's decision (Section 15126.6(c)). Among the factors that may be used to eliminate an alternative from detailed consideration in an EIR are that the alternative fails to meet most of the basic project objectives, that it is infeasible, or that it does not avoid significant environmental impacts.

A key CEQA requirement for an alternative is that it has the potential to "avoid or substantially lessen any of the significant effects of the project" (CEQA Guidelines Section 16126.6(a)). If an identified alternative clearly does not have the potential to provide an overall environmental advantage (as compared to the proposed project), it is usually eliminated from further consideration.

II.8.2 Description and Rationale for Alternatives Considered but Not Carried Forward for Detailed Analysis

The following alternatives were considered but were not included in the draft alternatives analyzed in this document.

1. Distributed Generation Alternative
2. Center for Energy Efficiency and Renewable Technologies (CEERT) Proposed Solar Areas Alternative
3. California Wind Energy Association (CalWEA) Proposed Wind Areas Alternative
4. BLM Lands Alternative
5. Private and Previously Disturbed Lands Alternative
6. Dispersed Development Alternative
7. Southeast Emphasis Alternative
8. Avian Avoidance Alternative

The summaries below provide a brief description of each rejected alternative along with the rationale explaining why the alternative was not analyzed in detail.

II.8.2.1 Distributed Generation Alternative

Alternative Description. A number of comments were received during the public scoping period suggesting that the agencies evaluate renewable distributed generation as opposed to, or in addition to, the development of centralized, utility-scale renewable energy facilities. Commenters suggested the DRECP consider opportunities for distributed generation in combination with energy conservation and sited near point of use both in and outside the Plan Area.

Distributed generation refers to the installation of small-scale solar energy facilities at individual locations at or near the point of consumption. The *2011 Integrated Energy Policy Report* published by the CEC defines distributed generation as: "(1) fuels and technologies accepted as renewable for purposes of the Renewable Portfolio Standard (RPS); (2) sized up to 20 MW; and (3) located within the low-voltage distribution grid or supplying power directly to a consumer" (CEC 2012b).

Distributed generation, as traditionally defined, has a number of benefits, including local electricity reliability, elimination of the need for some new transmission lines, and compatibility with urban areas. After energy efficiency and demand response, California has prioritized its preferred energy supply resources as (1) renewable energy, (2)

combined heat and power, and distributed generation, and (3) clean and most-efficient conventional generation.

As discussed in Volume I, Section I.3.5, current research indicates that development of both distributed generation and utility-scale renewable energy will be needed to meet California's RPS and climate change goals, along with other energy resources and energy efficiency technologies (NREL 2010; Linvill et al 2011; California Office of the Governor 2012; Zichella and Hladik 2013). For a variety of reasons (e.g., upper limits on integrating distributed generation into the electric grid, cost, lack of electricity storage in most systems, and continued dependency of buildings on grid-supplied power), distributed energy generation alone cannot meet the goals for renewable energy development. Ultimately, both utility-scale and distributed generation renewable energy development will need to be deployed at increased levels, and the highest penetration of solar power overall will require a combination of both types (NREL 2010).

As noted in multiple scoping comments, Governor Jerry Brown's Clean Energy Jobs Plan identifies the goal to install 20,000 MW of new renewable capacity by 2020, including 12,000 MW of local electricity generation from small generation sources such as distributed generation (CEC 2011). In 2011, Governor Brown convened a conference with representatives of agencies, businesses, and organizations that would be involved in or affected by the 12,000 MW goal during which a series of expert-led panels identified the most critical barriers to achieving this goal and solutions to these barriers. Barriers included (Russell and Weissman 2012):

- Grid planning is the process where utilities, federal and state grid managers, and other stakeholders consider a range of long-term energy planning issues. Participants stated that the grid planning framework is disjointed and fails to adequately consider or plan for the potential grid impacts or benefits of local renewables.
- Integration and reliability concerns were highlighted due to local renewable generation being sent to the grid through power lines and equipment that were primarily designed to transport energy in the opposite direction. Unless managed appropriately, the integration of local renewable energy can impact the safe and reliable operation of distribution grids. Integration is hindered by a lack of information about the capacities and constraints of existing distribution grids.
- Financing and procurement poses challenges for all sizes of local renewables. Some financing strategies such as the new energy metering program and California Solar initiative promote widespread development of customer-side systems but many residents and businesses are still unable to buy or lease equipment or purchase renewable energy. Federal tax incentives and procurement programs stimulated rapid development but may expire or neglect key technologies, project sizes, or locations.

- Interconnection of a proposed energy generator to the power grid functions as a source of significant uncertainty and inefficiency. If a generator meets certain criteria it can take advantage of a "fast track" process but if not, the utility conducts a series of studies to determine the impacts to the grid. For local renewable generation, the interconnection process is critical because of the large number of interconnections that would be required. Concerns about the lack of alignment between the interconnection and procurement process were also highlighted.
- Permitting new renewable energy projects can also be challenging. Some cities and counties are pursuing renewable energy systems while others are not prepared to review or approve local renewable generation. Many cities and counties do not consider renewable energy in the planning codes and the requirements, permit fees, and local government expertise vary widely between jurisdictions, causing inefficiencies and increased costs. Local governments cited a lack of funds and time to update codes to address local renewable energy and the difficulty in keeping pace with the rapid development of local renewable technologies. Emergency responder representatives also discussed the challenge of understanding local renewables and new and emerging technologies.

The state is actively working to overcome barriers to the development of distributed renewable energy generation. In a 2011 report on renewable Energy Development in California, the California Energy Commission discussed barriers to the development of distributed generation, as well as potential solutions to overcome those barriers (CEC 2011). The Energy Commission followed up in its 2012 Renewable Energy Action Plan, included as part of the 2012 IEPR Update, with a number of specific recommendations for actions that are necessary to develop and integrate distributed generation in California (CEC 2012c). The Energy Commission is working with a variety of stakeholders, including the California Public Utilities Commission, the California Independent System Operator, community and environmental justice groups, and federal agency partners, to implement the recommendations in the Renewable Energy Action Plan and accelerate the development of distributed renewable energy generation in California.

Consistent with these efforts, DRECP alternatives evaluated in this EIR/EIS include utility-scale distributed generation, and the DRECP Renewable Energy Calculator assumes a high level of rooftop solar distributed generation as requested by the commenters. Specifically, the DRECP Renewable Energy Acreage Calculator and the 2040 Revised Scenario's Renewable Portfolio[7] (revised July 27, 2012) anticipates 7,000 MW of small rooftop solar distributed generation and more than 9,000 MW of ground-mounted distributed generation that may be needed for the state to be on track in 2040 to meet its 2050 greenhouse gas emissions reduction targets. Over 25% of the ground-mounted distributed generation is assumed to be located in the DRECP. As

[7] Available at: http://www.drecp.org/documents/docs/DRECP_Acreage_Calculator_Documentation.pdf.

such, each of the action alternatives incorporates at least 1,700 MW of ground-mounted utility-scale distributed generation rated at 20 MW.

Consistency with Purpose and Need and Objectives. Under the Distributed Generation Alternative, the DRECP would not plan for the development of utility-scale renewable energy facilities larger than 20 MW, but instead assume that future greenhouse gas and emission reduction goals will be achieved exclusively through distributed generation. This would not meet the interagency goal because it does not provide a streamlined process for the development of utility-scale renewable energy and does not provide for the long-term conservation and management of Covered Species and other physical, cultural, scenic and social values within the Plan Area.

The Distributed Generation Alternative would not respond to the BLM's purpose and need for agency action in the EIR/EIS because it would not advance the federal orders and mandates that compel the BLM to evaluate renewable energy projects on federally administered lands (see Volume I, Section I.1.2). It would not respond to the BLM's purpose to conserve biological, physical, cultural, social, and scenic values of the CDCA because it would not identify and incorporate public lands managed for conservation purposes within the CDCA.

The Alternative partially responds to the USFWS's purpose and need to provide a means whereby the ecosystems upon which federally protected species depend may be conserved and to provide a program for the conservation of such species, because sensitive desert habitats would not be disturbed by large, utility-scale solar facilities. However, this alternative would not respond to the USFWS's purpose and need to advance DOI's national policy goals to identify and prioritize specific locations best suited for large-scale production of solar energy on public lands and encourage the production, development, and delivery of renewable energy as one of the DOI's highest priorities.

The Distributed Generation Alternative could partially meet the CEC, CDFW, and CSLC objectives to contribute to California's RPS and greenhouse gas reduction mandates and goals by planning for approximately 20,000 MW of renewable energy and transmission in the Plan Area. It would only partially meet the objective of accommodating and minimizing the potential environmental impact of utility-scale renewable energy generation sufficient to accommodate foreseeable demand in Plan Area through 2040. It would also not meet the objective because it would not provide for the long-term conservation and management of Covered Species within the DRECP.

Rationale for Elimination. Because the Distributed Generation Alternative conflicted with the DRECP goals and with the purpose and need and objectives of one or more of the REAT agencies, the alternative did not advance for further analysis. Utility-scale distributed generation has been incorporated into each of the DRECP alternatives, and substantial

development of additional local distributed renewable energy generation was assumed in estimating the potential for renewable energy development in the DRECP area through the CEC's renewable energy calculator.

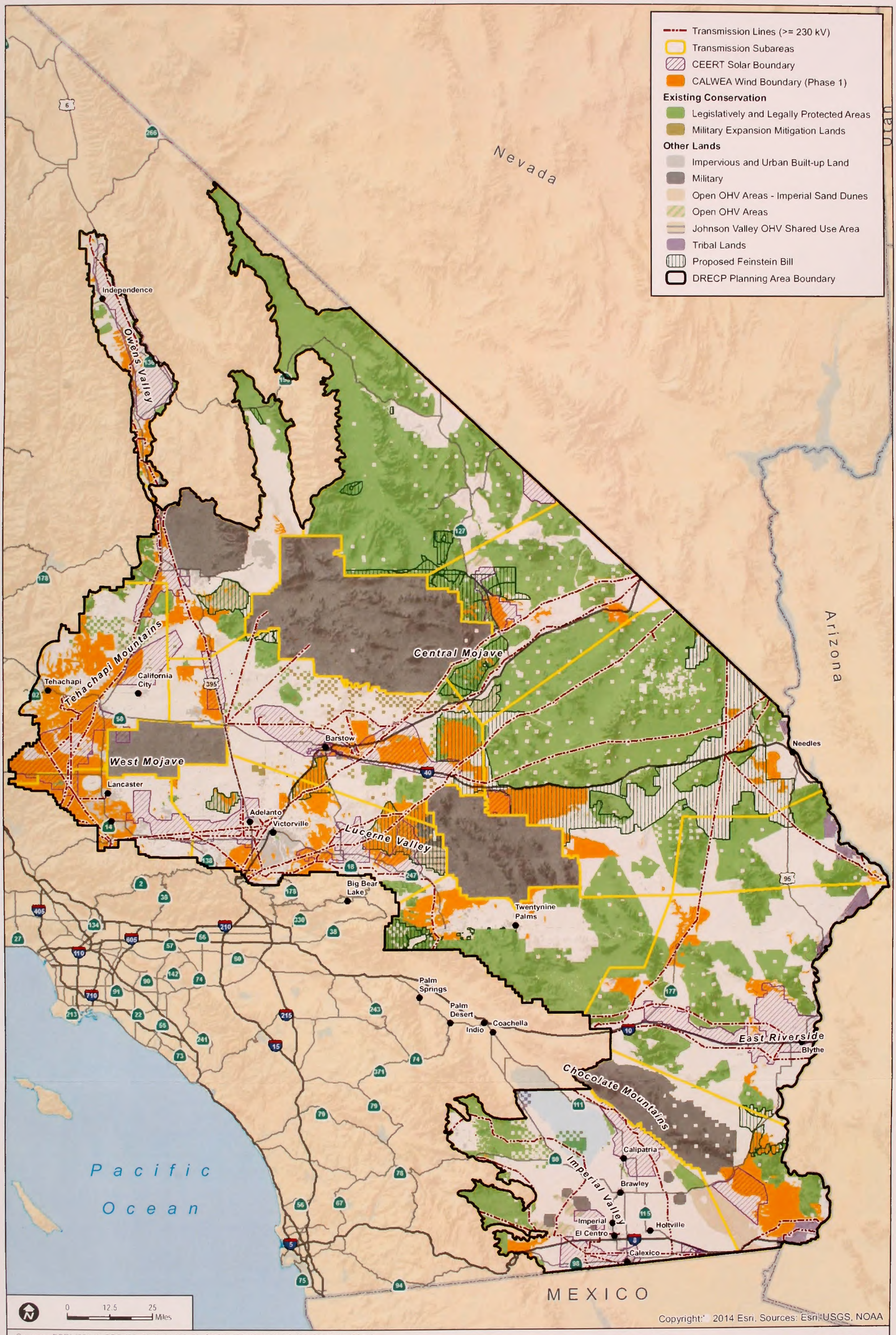
II.8.2.2 CEERT and LSA Proposed Solar Areas Alternative

Alternative Description. In August 2011, CEERT and the Large-scale Solar Association (LSA) submitted maps identifying more than 2 million acres suitable for the development of solar energy generation (CEERT 2011a). These areas have optimal characteristics for large-scale solar project development: above-average sun exposure (insolation), appropriate slope, and proximity to transmission. CEERT and LSA also noted that areas with many small, separately owned parcels ("parcelization") can inhibit the efficient development of larger-scale solar energy generation. The majority of the areas identified are within the West Mojave highlands surrounding Edwards Air Force Base, as well as the Lucerne Valley, West Chocolate Mountains, southern Imperial Valley, and eastern Riverside County. The areas proposed by CEERT and LSA are illustrated in Figure II.8-1.

Consistency with Purpose and Need and Objectives. The CEERT Proposed Solar Areas Alternative would meet the interagency goal of providing a streamlined process for the development of utility-scale renewable energy. It would partially meet the goal of providing for the long-term conservation and management of Covered Species and other physical, cultural, scenic and social values within the Plan Area because some of the locations identified in the Alternative conflict with this goal.

The CEERT Proposed Solar Areas Alternative would respond to the BLM's purpose and need for agency action in the EIR/EIS including the federal orders and mandates that compel the BLM to evaluate renewable energy projects on federally administered lands (see Volume I, Section I.1.2). It would partially respond to the BLM's purpose to conserve biological, physical, cultural, social, and scenic values of the CDCA and identify and incorporate public lands managed for conservation purposes within the CDCA.

The Alternative would only partially respond to the USFWS's purpose and need to provide a means whereby the ecosystems upon which federally protected species depend may be conserved and to provide a program for the conservation of such species, because large areas of sensitive desert habitat would be destroyed. However, this alternative would respond to the USFWS's purpose and need to advance DOI's national policy goals to identify and prioritize specific locations best suited for large-scale production of solar energy on public lands and encourage the production, development, and delivery of renewable energy as one of the DOI's highest priorities.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); Platts (2011)

FIGURE II.8-1

DRECP Plan-Wide Energy Assumptions - CEERT, LSA, and CalWEA Proposals

INTENTIONALLY LEFT BLANK

The Alternative would only partially respond to the USFWS's purpose and need to provide a means whereby the ecosystems upon which federally protected species depend may be conserved and to provide a program for the conservation of such species, because large areas of sensitive desert habitat would be destroyed. However, this alternative would respond to the USFWS's purpose and need to advance DOI's national policy goals to identify and prioritize specific locations best suited for large-scale production of solar energy on public lands and encourage the production, development, and delivery of renewable energy as one of the DOI's highest priorities.

The CEERT Proposed Solar Areas Alternative would only partially meet the objective of accommodating and minimizing the potential environmental impact of utility-scale renewable energy generation sufficient to accommodate foreseeable demand in Plan Area through 2040 because some of the locations would not minimize impacts. It would meet the CEC, CDFW, and CSLC objectives to contribute to California's RPS and greenhouse gas reduction mandates and goals by planning for approximately 20,000 MW of renewable energy and transmission in the Plan Area. It would partially meet the objective of providing for the long-term conservation and management of Covered Species within the DRECP.

Rationale for Elimination. The CEERT Proposed Solar Areas Alternative would meet the interagency goal of providing a streamlined process for the development of utility-scale renewable energy but would only partially meet the interagency goal of providing for the long-term conservation and management of Covered Species and other physical, cultural, scenic and social values within the Plan Area because some of the locations suggested would result in significant resource conflicts. The locations suggested by the Alternative that did not result in significant resource conflicts were included in the alternatives analyzed in detail in this EIR/EIS. The EIR/EIS alternatives incorporate between 504,000 and 1,138,000 acres of the 2 million acres of solar development areas proposed by CEERT. This means that between 45% and 55% of the DFAs in the Draft EIR/EIS alternatives are the same lands as those identified in the CEERT Proposed Solar Areas Alternative. Table II.8-1 defines the acreage of the CEERT Alternative that was included in each of the retained alternatives.

Table II.8-1
Acreage of CEERT and LSA Alternative Included in the Retained Alternatives

Alternative	Acres Incorporated	Total DFA Acres	Percent of DFAs per Alternative
Preferred Alternative	965,104	2,027,760	48
Alternative 1	489,280	1,070,270	46
Alternative 2	1,350,579	2,475,381	55
Alternative 3	662,121	1,407,597	47
Alternative 4	872,184	1,608,292	54

Source: DRECP 2012a.

The CEERT Proposed Solar Areas Alternative identified locations that were not presented in the alternatives carried forward because they would affect sensitive resources. These locations include:

- Sensitive biological resources such as the Mojave River corridor (Barstow), Significant Ecological areas (Los Angeles County), BLM Flat-tailed Horned Lizard Management areas (Yuha Basin), habitat linkage areas (West Mojave)
- Conflicts with DFA exclusions related to the CDCA boundary along the Colorado River (East Riverside)
- Overlap with the proposed Mojave Trails National Monument (east of Barstow)
- Conflicts with DFA exclusions related to existing development in portions of the Owens Valley/West Mojave, Barstow, and Imperial County
- Conflicts with DFA exclusions related to open off-highway vehicle (OHV) use areas designated on BLM lands (Imperial County and the West Mojave areas)

Because the CEERT Proposed Solar Areas Alternative identified locations that conflicted with the DRECP goals and with the purpose and need and objectives of one or more of the REAT agencies, the alternative was not carried forward for further analysis. However, as described above, the CEERT solar development areas without resource conflicts or with limited conflicts are included in the Draft DRECP and EIR/EIS alternatives.

II.8.2.3 CalWEA Proposed Wind Areas Alternative

Alternative Description. CalWEA recommended that 2.3 million acres of land within the DRECP Plan Area be developable for wind energy DFAs, to be developed in two phases (CalWEA 2012a). Phase 1 would include all the CalWEA identified lands within 10 miles of a transmission corridor. It would have three categories of land: Wind DFAs, Neutral Areas, and Reserve Design Areas, as described below. CalWEA stated that avian and bat species would be addressed as an overlay to each of the categories described, and that in all areas developers would follow state and federal avian and bat siting guidelines.

- Wind DFAs include the highest-quality wind resources within 10 miles of an existing transmission corridor that do not overlap with lands classified as areas of special environmental concern. Projects in Wind DFAs would receive permit streamlining benefits for ground-dwelling (non-flying) species.
- Neutral Areas include lower-quality, potentially commercially viable wind resources and high-quality biological resources within Areas of Critical Environmental Concern (ACECs) and Desert Wildlife Management Areas (DWMAs) within 10 miles of existing transmission corridors. These areas would be open to conservation

efforts or wind development. Wind development may be subject to higher survey and mitigation requirements for ground-dwelling (non-flying) species.

- Reserve Design areas would prohibit wind development unless specifically determined to be compatible with the biological goals and objectives of the area.

Phase 2 would begin no later than 2020 and would include the portions of the 2.3 million acres of wind-energy developable lands identified by CalWEA that were not included in Phase 1. The Phase 2 lands would be evaluated as either Phase 2 DFAs or Neutral areas starting no later than 2017. The evaluation would be based on additional environmental data, experience in developing Phase 1 areas, the state of renewable energy market competition, achievement of the State's clean energy goals, and other factors.

CalWEA recommended that the DRECP plan for development of at least 25,000 MW of wind energy capacity. CalWEA assumed that more wind energy could be developed within the DRECP planning area than in the rest of the State. CalWEA calculated that 25,000 MW of wind development would require wind development leases or rights-of-way on about 4% of the DRECP planning area, and would impact less than 1% of the Plan Area in terms of land disturbance. The areas suggested by CalWEA are illustrated in Figure II.8-1.

Consistency with Purpose and Need and Objectives. The CalWEA Proposed Wind Areas Alternative would meet the interagency goal of providing a streamlined process for the development of utility-scale renewable energy. It would partially meet the goal of providing for the long-term conservation and management of Covered Species and other physical, cultural, scenic and social values within the Plan Area because some of the locations identified in the Alternative conflict with this goal.

The CalWEA Proposed Wind Areas Alternative would respond to the BLM's purpose and need for agency action in the EIR/EIS including the federal orders and mandates that compel the BLM to evaluate renewable energy projects on federally administered lands (see Volume I, Section I.1.2). It would partially respond to the BLM's purpose to conserve biological, physical, cultural, social, and scenic values of the CDCA because it would not identify and incorporate public lands managed for conservation purposes within the CDCA.

The Alternative would only partially respond to the USFWS's purpose and need to provide a means whereby the ecosystems upon which federally protected species depend may be conserved and to provide a program for the conservation of such species, because large areas of wind facilities would be located in sensitive avian and bat habitats, including important habitats for golden eagles and California condors.

However, it would respond to the USFWS's purpose and need to advance the DOI's national policy goals to identify and prioritize specific locations best suited for large-scale production of solar energy on public lands and encourage the production, development, and delivery of renewable energy as one of the DOI's highest priorities.

The CalWEA Proposed Wind Areas Alternative would only partially meet the objective of accommodating and minimizing the potential environmental impact of utility-scale renewable energy generation sufficient to accommodate foreseeable demand in Plan Area through 2040 because some of the locations would not minimize impacts. It could meet the CEC, CDFW, and CSLC objectives to contribute to California's RPS and greenhouse gas reduction mandates and goals by planning for approximately 20,000 MW of renewable energy and transmission in the Plan Area. It would partially meet the objective of providing for the long-term conservation and management of Covered Species within the DRECP.

Rationale for Elimination. The CalWEA Proposed Wind Areas Alternative would meet the interagency goal of providing a streamlined process for the development of utility-scale renewable energy but would only partially meet the interagency goal of providing for the long-term conservation and management of Covered Species and other physical, cultural, scenic and social values within the Plan Area. The alternatives analyzed in this EIR/EIS incorporate development areas of between 521,000 to 1,507,000 acres of the 2.3 million acres of Wind DFAs proposed by CalWEA. As such, between 49% and 61% of the DFAs in the DRECP are the same as those identified in the CalWEA Proposed Wind Areas Alternative. Table II.8-2 defines the acreage of the CalWEA Alternative that was included in the analyzed alternatives.

Table II.8-2
Acreage of CalWEA Alternative Included in the Retained Alternatives

Alternative	Acres Incorporated	Total DFA Acres	Percent of DFAs per Alternative
Preferred Alternative	1,083,178	2,027,760	53
Alternative 1	520,584	1,070,270	49
Alternative 2	1,506,500	2,475,381	61
Alternative 3	728,778	1,407,597	52
Alternative 4	965,032	1,608,292	60

Source: DRECP 2012a.

The remaining acres identified in the CalWEA Proposed Wind Areas Alternative were eliminated from detailed analysis due to the following resource conflicts:

- Sensitive biological resources such as high concentration of nesting golden eagles (Barstow and the Cady and Bristol mountains) and California condors (West Mojave and Owens Valley)
- Conflicts with the DFA 2-mile buffer applied to tribal lands (Imperial County and Chocolate Mountains)
- Overlap with the proposed Mojave Trails National Monument (east of Barstow)
- Existing wind development precludes use of some of the acres identified by CalWEA in portions of Imperial County (Ocotillo Wind Project)
- Conflicts with Department of Defense-identified locations with a high likelihood of unacceptable risk to national security[8] (portions of West Mojave, Owens Valley, Imperial County, and South Barstow)

Because the CalWEA Proposed Wind Areas Alternative identified locations that conflict with the purpose and need and objectives for the Draft DRECP and EIS/EIR, the complete alternative was not retained. However, as explained above, up to 57% of the CalWEA proposed development areas with lower potential for resource conflicts are included in the Draft DRECP and EIR/EIS alternatives.

II.8.2.4 BLM-Only Lands Alternative

Alternative Description. The BLM Lands Alternative would locate all renewable energy developments streamlined by the DRECP on BLM-administered public lands. Renewable energy development on private land would not be streamlined under the DRECP and would be analyzed on a case by case basis by the agency with jurisdiction over the project. Approximately 10 million acres within the 22.6 million acre DRECP Planning Area are administered by BLM under the CDCA Plan, and under the Bishop, Caliente/Bakersfield, and eastern San Diego County Resource Management plans. Further detail regarding the BLM-administered lands is provided in Chapter III.14, BLM Land Designations, Classifications, Allocations, and Lands with Wilderness Characteristics.

---

[8] The Department of Defense prepared background materials for the DRECP meeting July 25 and 26, 2012 that included figures indicating areas where wind towers would conflict with the Navy and Air Force high risk of adverse impact zones such as restricted airspace, terrain flight areas, or the Marine Corps Air Ground Combat Center Twentynine Palms Expansion, and that would result in an unacceptable risk to national security. The Department of Defense explained that this meant that if a DFA were established in such locations, the Department of Defense would closely scrutinize any projects and potentially object to a project at those locations. The figures are available at: http://www.drecp.org/meetings/2012-07-25-26_workshop/background/Department_of_Defense_Materials/Dept_of_Defense_Conflict_Areas_07_24_2012.pdf. This does not preclude development of wind within these areas as a Covered Activity, provided that the project proponent receives clearance for the project's development from the DoD Renewable Energy Clearinghouse.

Consistency with Purpose and Need and Objectives. The BLM Lands Alternative would partially meet the interagency goal of providing a streamlined process for the development of utility-scale renewable energy. However, by limiting the benefits of streamlining to projects on BLM land, it would have the effect of encouraging development on federal land, which is often less disturbed than private land. It would partially meet the goal of providing for the long-term conservation and management of Covered Species and other physical, cultural, scenic and social values within the Plan Area because some of the locations identified in the Alternative conflict with this goal.

The BLM Lands Alternative would respond to the BLM's purpose and need for agency action in the EIR/EIS including the federal orders and mandates that compel the BLM to evaluate renewable energy projects on federally administered lands (see Volume I, Section I.1.2). It would partially respond to the BLM's purpose to conserve biological, physical, cultural, social, and scenic values of the CDCA and identify and incorporate public lands managed for conservation purposes within the CDCA.

The Alternative would only partially respond to the USFWS's purpose and need to provide a means whereby the ecosystems upon which federally protected species depend may be conserved and to provide a program for the conservation of such species, because large areas of sensitive habitats on BLM lands would be destroyed by renewable energy development. However, it would respond to the USFWS's purpose and need to advance the DOI's national policy goals to identify and prioritize specific locations best suited for large-scale production of solar energy on public lands and encourage the production, development, and delivery of renewable energy as one of the DOI's highest priorities.

The BLM Lands Alternative would limit projects to BLM land, so would only partially meet the objective of accommodating and minimizing the potential environmental impact of renewable energy generation that may foreseeably be developed in DRECP area through 2040. It could meet the CEC, CDFW, and CSLC objectives to contribute to California's RPS and greenhouse gas reduction mandates and goals by planning for approximately 20,000 MW of renewable energy and transmission in the Plan Area. It would also only partially meet the objective of providing for the long-term conservation and management of Covered Species within the DRECP. This alternative would not provide for the development and management of school lands in the Plan Area and any development on these lands would not be streamlined by the DRECP. Therefore the alternative would not meet the CSLC Objectives.

Rationale for Elimination. The BLM Lands Alternative would partially meet the interagency goal of providing a streamlined process for the development of utility-scale renewable energy but would limit this goal to public lands. It would only partially meet the interagency goal of providing for the long-term conservation and management of Covered

Species and other physical, cultural, scenic and social values within the Plan Area because it would provide for conservation and management only on public lands.

The retained alternatives incorporate DFAs that include between 81,000 to 720,000 acres of land of the 10 million acres administered by the BLM within the DRECP Plan Area. This means that between 8% and 29% of the DFAs are the same as those identified in the BLM Lands Alternative; moreover, each alternative evaluated in this document assumes renewable energy development on lands administered by the BLM. Table II.8-3 defines the acreage of the BLM Land Alternative that was included in each retained alternative.

Table II.8-3
Acreage of BLM Land Alternative Included in the Retained Alternatives

Alternative	Acres Incorporated	Total DFA Acres	Percent of Alternative DFAs
Preferred Alternative	370,186	2,027,760	18
Alternative 1	81,196	1,070,270	8
Alternative 2	720,469	2,475,381	29
Alternative 3	212,563	1,407,597	15
Alternative 4	258,219	1,608,292	16

Source: DRECP 2012a.

Siting of all renewable energy within the DRECP planning area on BLM land alone would not provide for balance or flexibility in siting renewable energy development on lands with less biological value; in some instances that siting would also not align with existing transmission corridors. BLM-administered land is located throughout the DRECP Planning Area, while transmission corridors generally parallel Interstate 15, Historic Route 66, Interstate 10, Interstate 8, Intestate 95, and the California border.

The REAT agencies' purpose and need and objectives for the Draft DRECP and Draft EIS/EIR include identifying the most appropriate locations within the planning area for development of renewable energy projects, while taking into account potential impacts to threatened and endangered species and sensitive natural communities. Limiting covered renewable energy development to BLM land would not meet the purpose and need and objectives because much of the BLM land within the DRECP Planning Area would conflict with the goals of protecting the most sensitive communities and would not use the best renewable energy resource areas for project development, some of which are located on private land. The alternative could result in more substantial conflicts with other resource values retained on BLM lands.

The Alternative would not be an interagency plan and would not meet the CSLC objectives. It would not require any action by USFWS to make incidental take permit decisions under Section 10(a)(1)(B) of the ESA related to renewable energy development on non-federal lands.

II.8.2.5 Private and Previously Disturbed Lands Alternative

Alternative Description. The Private and Previously Disturbed Lands Alternative would locate all renewable energy development streamlined by the DRECP on private lands that have been previously disturbed. Renewable energy development on federal or other public lands would not be streamlined under the DRECP and would be addressed on a case by case basis by the agencies with jurisdiction over the project. Approximately 1.8 million acres within the DRECP Planning Area are classified as disturbed land and agricultural land types[9] (DRECP 2012a). Imperial County has the largest percentage of disturbed and agricultural land (includes active and fallow land) (33%). The private/disturbed land is located in the following counties:

- Imperial County – 600,000 acres
- Los Angeles County – 340,000 acres
- Riverside County – 150,000 acres
- San Bernardino County – 450,000 acres
- Kern County – 245,000 acres

These acres of private/disturbed development land could be significantly reduced depending on whether they are active agriculture lands. Active agriculture lands are potentially unavailable for renewable energy development because of ongoing use and various state and local practices and policies protecting agriculture lands.

Consistency with Purpose and Need and Objectives. The Private and Previously Disturbed Lands Alternative would partially meet the interagency goal of providing a streamlined process for the development of utility-scale renewable energy. It would partially meet the goal of providing for the long-term conservation and management of Covered Species and other physical, cultural, scenic and social values within the Plan Area. Some of the locations identified in the Alternative conflict with this goal.

The Private and Previously Disturbed Lands Alternative would not respond to the BLM's purpose and need for agency action in the EIR/EIS including the federal orders and mandates

[9] In order to map disturbed land and agricultural land types, the DRECP used the Farmland Mapping and Monitoring Program categories that include Farmland of Local Importance, Farmland of Statewide Importance, Prime Farmland, Unique Farmland, and Disturbed. Additionally, a rural land cover type was developed for the DRECP based on a rural lands model that used road access data (DRECP 2011b)

that compel the BLM to evaluate renewable energy projects on federally administered lands (see Volume I, Section I.1.2). It could partially respond to the BLM's purpose to conserve biological, physical, cultural, social, and scenic values of the CDCA and identify and incorporate public lands managed for conservation purposes within the CDCA.

The Alternative would only partially respond to the USFWS's purpose and need to provide a means whereby the ecosystems upon which federally protected species depend may be conserved and to provide a program for the conservation of such species, because important avian habitat in agricultural lands, particularly in the Imperial Valley, would be destroyed. This alternative would respond to USFWS's purpose and need to advance the DOI's national policy goals to identify and prioritize specific locations best suited for large-scale production of solar energy on public lands and encourage the production, development, and delivery of renewable energy as one of the DOI's highest priorities.

The Private and Previously Disturbed Lands Alternative would partially meet the objective of accommodating and minimizing the potential environmental impact of renewable energy generation that may foreseeably be developed in DRECP area through 2040. It could meet the CEC, CDFW, and CSLC objectives to contribute to California's RPS and greenhouse gas reduction mandates and goals by planning for approximately 20,000 MW of renewable energy and transmission in the Plan Area. It would partially meet the objective of providing for the long-term conservation and management of Covered Species within the DRECP but would limit this objective to private land.

Rationale for Elimination. Because the Private and Previously Disturbed Lands Alternative conflicted with the DRECP goals and with the purpose and need and objectives of one or more of the REAT agencies, the alternative did not advance for further analysis. The Private and Previously Disturbed Lands Alternative would partially meet the interagency goal of providing a streamlined process for the development of utility-scale renewable energy but would limit this goal to private lands. This Alternative would not respond to the BLM's and DOI's purpose to evaluate renewable energy projects on federally administered lands. Under this alternative, the BLM's role would be limited to providing for conservation and management of Covered Species and other physical, cultural, scenic and social values within the Plan Area.

The alternatives included in this document incorporate high levels of private and previously disturbed land, between 916,000 to 1,649,000 acres of the 1.8 million acres of private land within the DRECP Planning Area boundary. Between 67% and 86% of the DFAs in the retained alternatives are the same lands as those identified in the Private Land Alternative, and each alternative assumes that there will be some renewable energy development on private lands. Table II.8-4 defines the acreage of the Private and Previously Disturbed Lands Alternative that was included in each retained alternative.

Table II.8-4
Acreage of Private and Previously Disturbed Land Alternative Included in the Retained Alternatives

Alternative	Acres Incorporated	Total DFA Acres	Percent of DFAs per Alternative
Preferred Alternative	1,568,942	2,027,760	77
Alternative 1	916,280	1,070,270	86
Alternative 2	1,649,377	2,475,381	67
Alternative 3	1,113,180	1,407,597	79
Alternative 4	1,271,803	1,608,292	79

Source: DRECP 2012a.

Siting renewable energy only on private land would not provide balance or flexibility in siting renewable energy development because there is limited private land throughout the DRECP Planning Area and the private land does not always correlate with areas with the highest energy resource values. In some instances, development on private land would not align with existing transmission corridors. Meeting statewide and federal renewable energy goals within the DRECP planning area boundary exclusively on private lands would result in substantial conflicts with current and proposed land uses on private lands. Some counties expressed concern that development of renewable energy on private land could impact county land-use programs and controls, and could negatively affect local economies, county resources, local character, jobs, property tax revenue, agriculture, and recreation and historical resources (County of Riverside 2011a, DRECP 2011a). Private lands that were not incorporated into the analyzed alternatives have high biological resource conflicts and do not align with DRECP purpose and need. For these reasons, the Private and Previously Disturbed Lands Alternative was not retained.

II.8.2.6 Dispersed Development Alternative

Alternative Description. The April 25–26, 2012 DRECP Stakeholder Committee Meeting discussed six renewable energy development scenarios, with potential DFAs ranging from "concentrated" to "dispersed" development. Development Scenario 6 was the most dispersed development scenario and provided the most flexibility for renewable energy development, as well as the greatest potential to respond to market constraints (DRECP 2012b). Development Scenario 6 included all of the potential development within the DRECP October 2011 Preliminary Conservation Strategy Renewable Energy Study areas and Solar Programmatic EIS Solar Energy zones, in addition to other industry-identified development areas (DRECP 2012b). This scenario also presented the highest potential conflicts with biological and non-biological resources and uses within the DRECP Plan Area. It included 4.6 million acres of DFAs: 57% were private, 39% were federal (BLM-

administered), and 4% were other (municipal, district) (DRECP 2012). Development Scenario 6 is illustrated in Figure II.8-2.

Consistency with Purpose and Need and Objectives. The Dispersed Development Alternative would meet the interagency goal of providing a streamlined process for the development of utility-scale renewable energy. It would partially meet the goal of providing for the long-term conservation and management of Covered Species and other physical, cultural, scenic and social values within the Plan Area because many of the locations identified in the Alternative conflict with this goal.

The Dispersed Development Alternative would respond to the BLM's purpose and need for agency action in the EIR/EIS including the federal orders and mandates that compel the BLM to evaluate renewable energy projects on federally administered lands (see Volume I, Section I.1.2). It would partially respond to the BLM's purpose to conserve biological, physical, cultural, social, and scenic values of the CDCA and identify and incorporate public lands managed for conservation purposes within the CDCA.

The Alternative would only partially respond to the USFWS's purpose and need to provide a means whereby the ecosystems upon which federally protected species depend may be conserved and to provide a program for the conservation of such species, because large areas of high biological resource value would be destroyed. However, this alternative would respond to USFWS's purpose and need to advance DOI's national policy goals to identify and prioritize specific locations best suited for large-scale production of solar energy on public lands and encourage the production, development, and delivery of renewable energy as one of the DOI's highest priorities.

The Dispersed Development Alternative would only partially meet the objective of accommodating and minimizing the potential environmental impact of utility-scale renewable energy generation sufficient to accommodate foreseeable demand in Plan Area through 2040 because some of the locations would not minimize impacts. It could meet the CEC, CDFW, and CSLC objectives to contribute to California's RPS and greenhouse gas reduction mandates and goals by planning for approximately 20,000 MW of renewable energy and transmission in the Plan Area. It would partially meet the objective of providing for the long-term conservation and management of Covered Species within the DRECP.

Rationale for Elimination. The Dispersed Development Scenario would not concentrate renewable energy development in DFAs, so it could direct transmission to more environmentally constrained locations. It would result in higher biological resource conflicts than the alternatives carried forward; about 62% of the scenario would overlap with areas of potential conflict so this alternative would have higher biological conflicts than the alternatives carried forward (DRECP 2012b). Because the Dispersed Development Scenario identified locations that conflicted with the Draft DRECP and EIR/EIS purpose and need, the alternative was not advanced. However, almost 2.5 million acres of the

Alternative development areas that have lower potential resource conflict are included in the Draft DRECP and EIS/EIR alternatives.

II.8.2.7 Southeast Emphasis Alternative

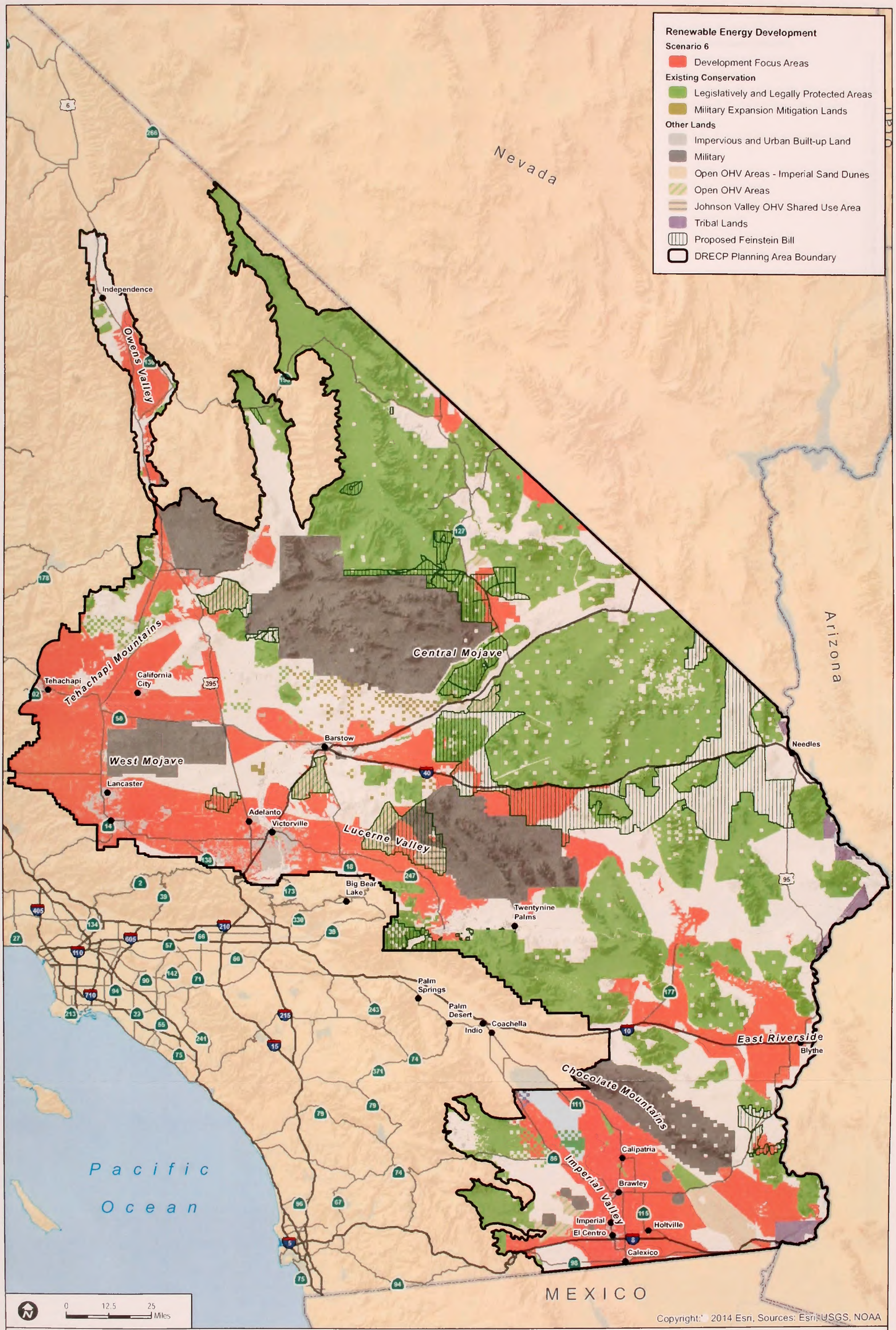
Alternative Description. This alternative was defined as the "Southeast Emphasis Alternative – Alternative 4" in the July 25, 2012, Overview of DRECP Alternatives – Briefing Materials. This alternative would focus development in the southeast portion of the DRECP planning area, including eastern Riverside County and Imperial County. The alternative assumed almost 15,000 MW of development in Imperial County and more than 4,000 MW of development in Riverside County with minimal development in other locations throughout the DRECP planning area (DRECP 2012a).

The alternative would include development both on public lands in the southeast portion of the Planning Area, and on private lands in Imperial County. It would include 1.29 million acres of DFAs, with about 406,000 acres of land administered by BLM (31% of the DFAs) and 820,000 acres of private lands (63% of the DFAs) (DRECP 2012a). It would include more than 545,000 acres of agriculture lands and more than 37,000 acres of dune communities (DRECP 2012a). The Southeast Emphasis Alternative would incorporate about 537,000 acres of the CEERT- and LSA-proposed solar areas and about 290,000 acres of the CalWEA-identified wind areas (DRECP 2012a). The alternative is illustrated in Figure II.8-3.

Consistency with Purpose and Need and Objectives. The Southeast Emphasis Alternative would meet the interagency goal of providing a streamlined process for the development of utility-scale renewable energy. It would partially meet the goal of providing for the long-term conservation and management of Covered Species and other physical, cultural, scenic and social values within the Plan Area because some locations would conflict with this goal.

The Southeast Emphasis Alternative would respond to the BLM's purpose and need for agency action in the EIR/EIS including the federal orders and mandates that compel the BLM to evaluate renewable energy projects on federally administered lands (see Volume I, Section I.1.2). It would partially respond to the BLM's purpose to conserve biological, physical, cultural, social, and scenic values of the CDCA and identify and incorporate public lands managed for conservation purposes within the CDCA.

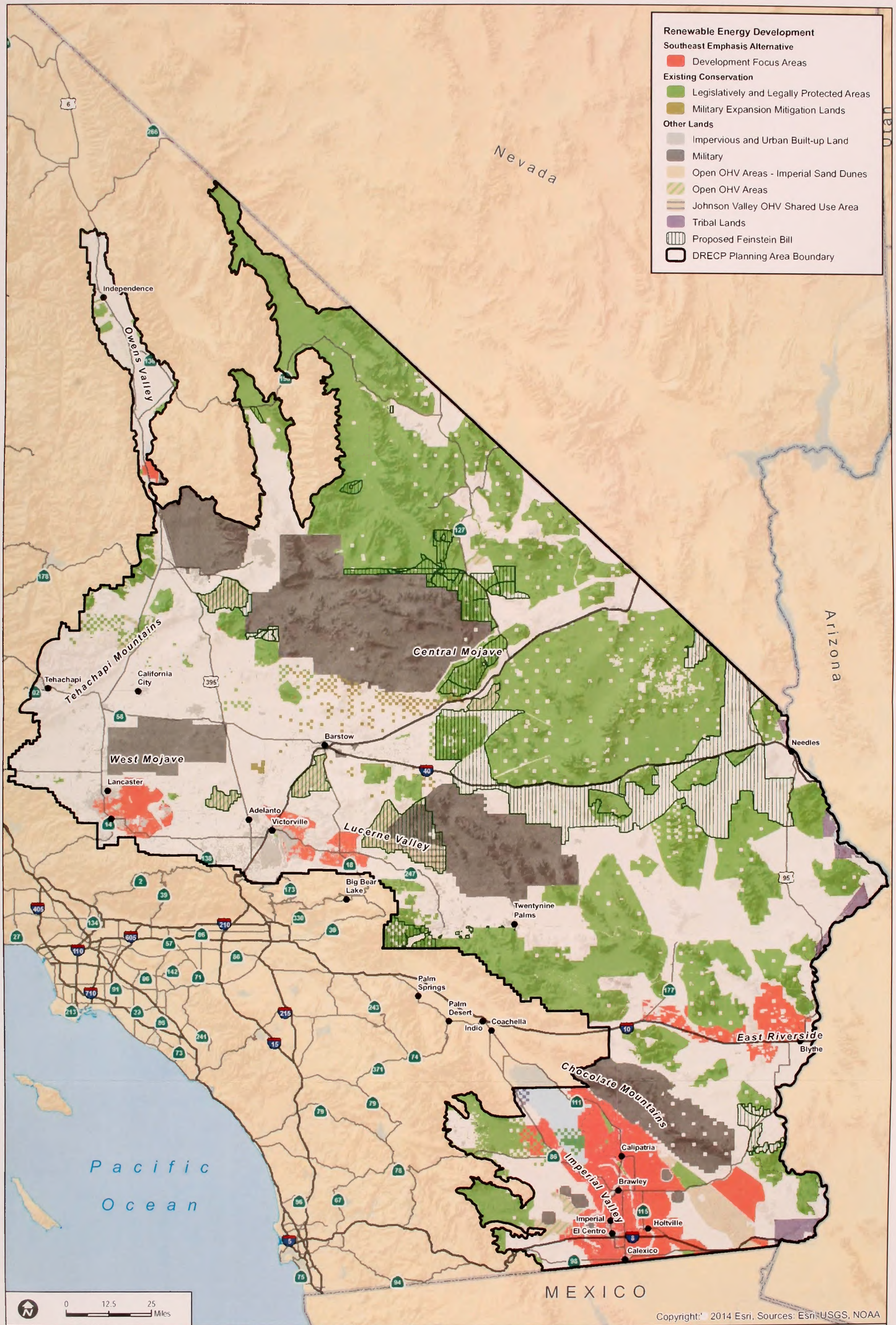
The alternative would only partially respond to the USFWS's purpose and need to provide a means whereby the ecosystems upon which federally protected species depend may be conserved and to provide a program for the conservation of such species, because large areas of sensitive desert habitats and avian agricultural habitats would be destroyed. However, this alternative would respond to USFWS's purposed and need to advance DOI's national policy goals to identify and prioritize specific locations best suited for large-scale production of solar energy on public lands and encourage the production, development, and delivery of renewable energy as one of the DOI's highest priorities.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.8-2
Scenario 6

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE II.8-3

Southeast Emphasis Alternative

INTENTIONALLY LEFT BLANK

The Southeast Emphasis Alternative would only partially meet the objective of accommodating and minimizing the potential environmental impact of utility-scale renewable energy generation sufficient to accommodate foreseeable demand in Plan Area through 2040 because it may not accommodate sufficient utility-scale renewable energy. It could meet the CEC, CDFW, and CSLC objectives to contribute to California's RPS and greenhouse gas reduction mandates and goals by planning for approximately 20,000 MW of renewable energy and transmission in the Plan Area. It would partially meet the objective of providing for the long-term conservation and management of Covered Species within the DRECP. This alternative would minimally provide for the development and management of school lands in the Plan Area and most development on these lands would not be streamlined by the DRECP. Therefore the alternative would not meet the CSLC Objectives.

Rationale for Elimination. Because the Southeast Emphasis Alternative conflicted with the DRECP goals and with the purpose and need and objectives of one or more of the REAT agencies, the alternative did not advance for further analysis. This alternative was eliminated because it would not meet the interagency goal of providing for the long-term conservation and management of Covered Species and other physical, cultural, scenic and social values within the Plan Area. Additionally, it was eliminated because it would minimally meet the CSLC objective to provide for development and management of school lands. The majority of the school lands would not allow streamlined development by the DRECP.

The Southeast Emphasis Alternative poses feasibility issues. It would locate 19,000 MW of renewable energy between Imperial County and eastern Riverside County. This would require substantial amounts of new transmission in and around the Iron Mountains and south of Chocolate Mountains. It would likely face severe permitting and siting constraints for new lines from both eastern Riverside and Imperial County into the Coachella Valley and would likely require expansion of the BLM Energy Corridor from Eastern Riverside west through the Coachella Valley (DRECP 2012a).

The alternative would eliminate farming on productive agricultural lands, including Williamson Act –protected lands. The agriculture-dependent economy in the Imperial County area could be harmed. Agriculture in 2011 in the Imperial Valley generated an estimated $1.175 billion in personal income, with an estimated total economic impact of $5.3 billion (Imperial County Farm Bureau 2012). Farmlands also provide important habitat for certain species like the burrowing owl, and the Salton Sea, farm fields, and IID canals provide habitat for birds. Over 70% of California's burrowing owls reside in Imperial County (Imperial County Farm Bureau 2012).

II.8.2.8 Avian Avoidance Alternative

Alternative Description. A number of scoping comments requested consideration of an alternative that would avoid impacts to avian species. The comments requested an alternative that would revise the DRECP planning area to:

- Avoid impacts to eagles
- Exclude areas that overlap with California condor use areas
- Exclude areas that support high densities of wintering or migratory birds, contain a high level of raptor activity, or contain breeding, wintering, or migrating populations of less abundant species

There are about 600,000 acres of modeled suitable foraging habitat for the California condor in the DRECP Plan Area (Species Profiles 2012a). This habitat is located in the Sierra Nevada and Southern California Mountain and Valleys and includes scrub, grassland, woodland, and wetland habitats. The DRECP Plan Area has historical and current occurrence records of bald eagles and golden eagles and suitable foraging habitat for condors and eagles (Species Profiles 2012b, Species Profiles 2012c). Eagle and condor breeding habitat is concentrated along the Highway 395 corridor and along the Tehachapi Mountain Range (DRECP 2012c, DRECP 2012d, DRECP 2012e). Eagle breeding habitat is also modeled south of Barstow, east of Victorville, in Joshua Tree National Park, within the along the Colorado River, surrounding the Salton Sea, and in Inyo County near the California and Nevada border (DRECP 2012c, DRECP 2012d).

The Avian Avoidance Alternative would avoid the modeled avian foraging and breeding habitat but would not focus renewable energy facilities into areas most suited for development with the least conflicts with long-term conservation and management of other Covered Species.

Consistency with Purpose and Need and Objectives. The Avian Avoidance Alternative would partially meet the interagency goal of providing a streamlined process for the development of utility-scale renewable energy. It would partially meet the goal of providing for the long-term conservation and management of Covered Species and other physical, cultural, scenic and social values within the Plan Area. This is because it would avoid modeled foraging and breeding habitat for some avian species but would not provide for the long-term conservation and management of other Covered Species or physical, cultural, scenic and social values.

The Avian Avoidance Alternative would respond to the BLM's purpose and need for agency action in the EIR/EIS including the federal orders and mandates that compel the BLM to evaluate renewable energy projects on federally administered lands (see Volume

I, Section I.1.2). It would partially respond to the BLM's purpose to conserve biological values of the CDCA and identify and incorporate public lands managed for conservation purposes within the CDCA because it would not provide conservation for physical, cultural, social, and scenic values.

The alternative would only partially respond to the USFWS's purpose and need to provide a means whereby the ecosystems upon which federally protected species depend may be conserved and to provide a program for the conservation of such species, because important avian habitats would not be disturbed. However, this alternative would respond to USFWS's purpose and need to advance DOI's national policy goals to identify and prioritize specific locations best suited for large-scale production of solar energy on public lands and encourage the production, development, and delivery of renewable energy as one of the DOI's highest priorities.

The Avian Avoidance Alternative would only partially meet the objective of accommodating and minimizing the potential environmental impact of utility-scale renewable energy generation sufficient to accommodate foreseeable demand in Plan Area through 2040 because it would only minimize impacts to modeled foraging and breeding habitat for some avian species but would not provide for the long-term conservation and management of other Covered Species or physical, cultural, scenic and social values. It could meet the CEC, CDFW, and CSLC objectives to contribute to California's RPS and greenhouse gas reduction mandates and goals by planning for approximately 20,000 MW of renewable energy and transmission in the Plan Area. It would partially meet the objective of providing for the long-term conservation and management of Covered Species within the DRECP.

Rationale for Elimination. The Avian Avoidance Alternative was eliminated because it would only partially meet the purpose and need and objectives to streamline renewable energy and provide for long-term conservation and management of Covered Species. It would not concentrate renewable energy development in the defined DFAs and would potentially pose high biological resource conflicts for Covered Species other than avian species. The DFAs incorporated in the alternatives analyzed in the EIR/EIS avoid the high-concentration golden eagle nesting habitat near Barstow and the Cady and Bristol mountains. Portions of the Tehachapi Mountains within the Condor Study Area were identified with high-conflict potential with development and excluded from DFAs. The Condor Study Area includes 37,000 acres of very high-value California condor habitat and areas of historically frequent condor foraging and roosting activity within the Tehachapi Uplands Multiple Species Habitat Conservation Plan, which contributes to the condor's ongoing recovery.

INTENTIONALLY LEFT BLANK

II.9 LITERATURE CITED – VOLUME II

Chapter II.1 Approach to Developing Alternatives

None.

Chapter II.2 No Action Alternative

43 CFR Part 4100. Grazing Administration—Exclusive of Alaska; General.

BLM (Bureau of Land Management). 1993. *Bishop Resource Management Plan Record of Decision.* April 1993.

BLM. 1997. *Caliente Resource Management Plan.* May 1997. http://www.blm.gov/ca/st/en/fo/bakersfield/Programs/planning/rmpcontents.html.

BLM. 1999. *The California Desert Conservation Area Plan 1980, as amended.* March 1999.

BLM. 2002a. *Proposed Northern and Eastern Mojave Desert Management Plan (NEMO), Amendment to the California Desert Conservation Area Plan, Final Environmental Impact Statement and Record of Decision*. Accessed October 2010. http://www.blm.gov/ca/news/pdfs/nemo2002/.

BLM. 2002b. *Proposed Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) and Final Environmental Impact Statement (EIS)*. July 2002. Accessed October 2010. http://www.blm.gov/ca/news/pdfs/neco2002/Table%20of%20Contents.pdf.

BLM. 2003. *Decision Record for Approved Western Colorado (WECO) Routes of Travel Designations, Amendment to the California Desert Conservation Area Plan 1980.* Environmental Assessment No. CA-670-EA2002-2. January 31, 2003. http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/elcentro/planning/2003/weco.Par.15830.File.dat/wecorod_2003_0131.pdf.

BLM. 2005. *Record of Decision: Implementation of a Wind Energy Development Program and Associated Land Use Plan Amendments.* December 2005.

BLM. 2006. *Proposed West Mojave Desert (WEMO) Amendment to the California Desert Conservation Plan, Final Environmental Impact Statement and Record of Decision.* March 2006. http://www.blm.gov/ca/st/en/fo/cdd/wemo.html.

BLM. 2008a.BLM. 2008b. *Record of Decision and Resource Management Plan Amendments for Geothermal Leasing in the Western United States.* BLM-WO-GI-09-003-1800. FES – 08-44. December 2008. http://www.blm.gov/wo/st/en/prog/energy/geothermal/geothermal_nationwide.html.

BLM. 2008c. *Record of Decision for the Truckhaven Geothermal Leasing Area, Imperial County, California.* BLM/CA/ES-2008-004+3200. July 2008. http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/elcentro/nepa/truckhaven.Par.47161.File.dat/Truckhaven%20ROD%200708-Web[1].pdf.

BLM. 2012a. *Approved Resource Management Plan Amendments/Record of Decision (ROD) for Solar Energy Development in Six Southwestern States.* October 2012. http://blmsolar.anl.gov/documents/docs/peis/Solar_PEIS_ROD.pdf.

BLM. 2012b. *BLM Manual 6340—Management of Designated Wilderness.* Rel. No. 6-135. July 13, 2012.

BLM. 2012c. *BLM Manual 6330—Management of BLM Wilderness Study Areas.* Rel. No. 6-134. July 13, 2012.

BLM. 2012d. *BLM Manual 6400—Wild and Scenic Rivers—Policy and Program Direction for Identification, Evaluation, Planning, and Management.* Rel. 6-136. July 13, 2012.

BLM. 2012e. *BLM Manual 6250—National Scenic and Historic Trail Administration.* Rel. 6-138. September 14, 2012.

BLM. 2013a. *Imperial Sand Dunes Record of Decision and Recreation Management Plan.* BLM/CA/ES-2013/013+1973. June 2013. http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/elcentro/planning/2010.Par.89984.File.dat/isdra_rod-ramp_final.pdf.

BLM. 2013b. *West Chocolate Mountains Renewable Energy Evaluation Area, Decision to Amend the California Desert Conservation Area Plan and to Approve a Noncompetitive Federal Geothermal Lease Application.* BLM/CA/ES-2013-001+1793. August 2013. http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/elcentro/nepa/wcm.Par.60116.File.dat/wcm_reea_rod.pdf.

BLM and DOE (U.S. Department of Energy). 2012. *Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States.* 8 vols. DES 10-59; DOE/EIS-0403. July 2012. http://solareis.anl.gov/documents/dpeis/index.cfm.

Flat-tailed Horned Lizard ICC (Interagency Coordinating Committee). 2003. *Flat-tailed Horned Lizard Rangewide Management Strategy*. 2003 revision. 80 pp. plus appendices.

Public Law 111-11. Additions to the National Wilderness Preservation System. March 30, 2009.

Chapter II.3 Preferred Alternative

16. U.S.C. 431–433. Antiquities Act of 1906.

16 U.S.C. 470–470x-6. National Historic Preservation Act of 1966, as amended.

16 U.S.C. 470aa–470mm. Archaeological Resource Protection Act of 1979.

16 U.S.C. 703–712. The Migratory Bird Treaty Act of 1918.

16 U.S.C. 1531–1544. Endangered Species Act of 1973, as amended.

25 U.S.C. 3001–3013. Native American Graves Protection and Repatriation Act of 1990.

33 U.S.C. 1251–1387. Federal Water Pollution Control Act, as amended (commonly referred to as the Clean Water Act). Congressional Declaration of Goals and Policy Regarding Navigation and Navigable Waters.

36 FR 8921. Executive Order 11593 of May 13, 1971: "Protection and Enhancement of the Cultural Environment."

40 CFR 1500–1508. Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act. November 28, 1978.

42 U.S.C. 15801–16538. Energy Policy Act of 2005, as amended.

42 FR 26951. Executive order 11988 of May 24, 1977: "Floodplain Management."

42 FR 26961. Executive Order 11990 of May 24, 1977: "Protection of Wetlands."

42 U.S.C. 1996. American Indian Religious Freedom Act of 1978.

42 U.S.C. 4321–4370f. National Environmental Policy Act of 1969, as amended.

42 U.S.C. 7401–7671q. Clean Air Act, as amended.

43 CFR 1610.4-9. Monitoring and Evaluation.

43 CFR 2805.16-17. Terms and Conditions of Grants.

43 CFR 3200; 3500; 3600; and 3802/09 Plans of Operations, Notices, Mine and Reclamation Plans or Plans of Development.

43 CFR 3809.11. When Do I Have to Submit a Plan of Operations?

43 CFR 3809.420(a)(3). Land-Use Plans.

43 CFR 3809.420(b)(7). Fisheries, Wildlife and Plant Habitat.

43 CFR 4110.4-2(b). Qualifications and Preference.

43 CFR 4180. Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration.

43 U.S.C. 315. Taylor Grazing Act of 1934.

43 U.S.C. 1701–1785. Federal Land Policy and Management Act of 1976, as amended.

43 U.S.C. 1901–1908. 1978 Public Rangelands Improvement Act.

50 CFR 17.22(b)(5) and 17.32(b)(5). "No Surprises" Rule. March 25, 1998.

50 CFR 22.1–22.32. Eagle Permits.

61 FR 26771–26772. Executive Order 13007 of May 24, 1996: "Indian Sacred Sites."

61 FR 63854. *Handbook for Habitat Conservation Planning and Incidental Take Permitting Process*. December 2, 1996.

63 FR 8859–8873. Habitat Conservation Plan Assurances ("No Surprises") Rule. March 25, 1998.

65 FR 35242–35357. Notice of Availability of a Final Addendum to the Handbook for Habitat Conservation Planning and Incidental Take Permitting Process. June 1, 2000.

68 FR 10635. Executive Order 13287 of March 3, 2003: "Preserve America."

AASHTO (American Association of State Highway and Transportation Officials). 1994. *American Association of State Highway and Transportation Officials Guidelines*. Washington, D.C.

Allen, M.F., J. T. Rotenberry, C. W. Barrows, V. M. Rorive, R. D. Cox, L. Hargrove, D. Hutchinson, and K. Fleming. 2005. *Coachella Valley Multiple Species Habitat Conservation Plan Monitoring Program: 2002-2005 Progress Report*. Final report. September 01, 2005. http://repositories.cdlib.org/ccb/CCB2005b.

Anderson, D.R., and K.P. Burnham. 1996. *A Monitoring Program for the Desert Tortoise.* Report to the Desert Tortoise Management Oversight Group.

Assembly Bill 32. California Global Warming Solutions Act of 2006. California Assembly, 2006.

Arizona v. California, 547 U.S. 150. 2006.

Atkinson, A.J., KP.C. Trenham, R.N. Fisher, S.A. Hathaway, B.S. Johnson, S.G. Torres, and Y.C. Moore. 2004. *Designing Monitoring Programs in an Adaptive Management Context for Regional Multiple Species Conservation Plans.* Prepared by U.S. Geological Survey, Western Ecological Research Center, in partnership with California Department of Fish and Game and U.S. Fish and Wildlife Service.

Barrows, C.W. 1997. "Habitat Relationships of the Coachella Valley Fringe-Toed Lizard (*Uma inornata*)." *The Southwestern Naturalist* 42:218–223.

Barrows, Cameron W., and Michael F. Allen. 2009. "Conserving Species in Fragmented Habitats: Population Dynamics of the Flat-Tailed Horned Lizard, *Phrynosoma Mcallii*." *The Southwestern Naturalist* 54(3):307–316.

Bell, J.L., L.C. Sloan, and M.A. Snyder. 2004. "Regional Changes in Extreme Climatic Events: A Future Climate Scenario." *Journal of Climate* 17:81–87.

BLM (Bureau of Land Management). 1988. Manual 1613 – Areas of Critical Environmental Concern.

BLM. 2002a. *Proposed Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) and Final Environmental Impact Statement (EIS).* July 2002. Accessed October 2010. http://www.blm.gov/ca/news/pdfs/neco2002/Table%20of%20Contents.pdf.

BLM. 2002b. *Proposed Northern and Eastern Mojave Desert Management Plan (NEMO), Amendment to the California Desert Conservation Area Plan, Final Environmental Impact Statement and Record of Decision.* Accessed October 2010. http://www.blm.gov/ca/news/pdfs/nemo2002/.

BLM. 2005. *Land Use Planning Handbook.* BLM Handbook H-1601-1.

BLM. 2006. *Proposed West Mojave Desert (WEMO) Amendment to the California Desert Conservation Plan, Final Environmental Impact Statement and Record of Decision.* March 2006. http://www.blm.gov/ca/st/en/fo/cdd/wemo.html.

BLM. 2007. *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development.*

BLM. 2008a. *National Environmental Policy Act Handbook.* H-1790-1. Release no. 1-1710. Washington D.C.: BLM. January 2008.

BLM. 2008b. *Recreation and Visitor Services Strategy – California.* 8300 (CA-930) June 10, 2008.

BLM. 2011a. Planning for Recreation and Visitor Services. MS-8320.

BLM. 2011b. Involvement of Grazing Permittee/Lessee with Solar and Wind Energy Right-of-Way Application Process. WO IM 2011-181.

BLM. 2014. "Solar PEIS Follow-on Studies." Accessed August 2014. http://www.solareis.anl.gov/eis/studies/index.cfm.

BLM and CDFG (California Department of Fish and Game). 2012. Memorandum of Understanding. November 27, 2012.

Borchers, D.L., J.L. Laake, C. Southwell, and C.G.M. Paxton. 2006. "Accommodating Unmodeled Heterogeneity in Double-Observer Distance Sampling Surveys." *Biometrics* 62:372–378.

Bowles, B.D., M.S. Sanders, and R.S. Hansen. 2006. "Ecology of the Jollyville Plateau Salamander (*Eurycea tonkawae*: Plethodontidae) with an Assessment of the Potential Effects of Urbanization." *Hydrobiologia* 553:111–120. doi 10.1007/s10750-005-5440-0.

Brooks, R.T. 2001. "Effects of the Removal of Overstory Hemlock from Hemlock-Dominated Forests on Eastern Redback Salamanders." *Forest Ecology and Management* 149:197–204.

Brown, P. 2006. "Lower Colorado River Bat Monitoring Protocol." January 2006.

Brown, P. 2010. *Roost Surveys and Monitoring for Lower Colorado River Bat Species: October 2002 Through May 2010.* PowerPoint slides. Prepared by Patricia E. Brown, PhD., of - Berry Biological Consulting.

Buckland, S.T., D.R. Anderson, K.P. Burnham, J.L. Laake, D.L. Borchers, and L. Thomas. 2001. *Introduction to Distance Sampling: Estimating Abundance of Biological Populations.* Oxford, England: Oxford University Press.

California Department of Water Resources. 2012. "Drought in California." Brochure produced by Natural Resources Agency. Sacramento, California. http://www.water.ca.gov/waterconditions/drought/docs/Drought2012.pdf.

California Government Code, Section 65965–65968. Mitigation Lands: Nonprofit Organizations.

California Fish and Game Code, Section 1600–1616. Fish and Wildlife Protection and Conservation.

California Fish and Game Code, Section 2800–2835. Natural Community Conservation Planning Act. 1991.

California Public Resources Code, Section 25000–25990. Warren-Alquist State Energy Resources Conservation and Development Act.

California Public Resources Code 37000–37042. Natural Heritage Preservation Tax Credit Act of 2000.

California State Controller's Office. 2014. "Yield Rates." http://www.sco.ca.gov/ard_yield_rates.html.

CDFG (California Department of Fish and Game). 2007. *California Swainson's Hawk Inventory: 2005–2006*. U.C. Davis Wildlife Health Center and Department of Fish and Game Resource Assessment Program. P0485902.

CDFG. 2010. *Biennial Report to the Legislature Regarding Bighorn Sheep Management*. December 2010.

CDFG. 2012. *Staff Report on Burrowing Owl Mitigation*. March 7, 2012.

CEC (California Energy Commission) and CDFG. 2007. *California Guidelines for Reducing Impacts to Birds and Bats From Wind Energy Development*. Prepared October 2007. Accessed June 12, 2014. http://www.energy.ca.gov/2007publications/CEC-700-2007-008/CEC-700-2007-008-CMF.PDF.

CEC and CDFG. 2010. *Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California*.

CH2M HILL. 2006. "Review and Recommendations of Methods for Monitoring Desert Pupfish (*Cyprinidon macularius*) Presence and Abundance." Final technical memorandum. Prepared by Timothy Hamaker and Jeff Tupen (CH2M HILL). November 29, 2006.

Colorado River Compact of 1922, as amended.

Conway, C. 2011. "Standardized North American Marsh Bird Monitoring Protocol." *Waterbirds* 34(3):319–346.

Conway, C.J., and J.C. Simon. 2003. "Comparison of Detection Probability Associated with Burrowing Owl Survey Methods." *Wildlife Management* 67:501–511.

Conway, C.J., V. Garcia, M.D. Smith, and K. Hughes. 2008. "Factors Affecting Detection of Burrowing Owl Nests During Standardized Surveys." *Journal of Wildlife Management* 72:688–696.

Conway, C.J. 2011. "Standardized North American Marsh Bird Monitoring Protocol." *Waterbirds* 34(3):319–346.

Delaney, David, and Philip Leitner. 2011. *Alternative Technique for Surveying and Monitoring Mohave Ground Squirrels: 2010-11 Results.* DRECP Briefing. PowerPoint slides.

DOI (Department of the Interior). 2008. 522 DM 1. Adaptive Management Implementation Policy.

DOI. 2014. *A Strategy for Improving Mitigation Policies and Practices of the Department of the Interior.*

DRECP ISA (Desert Renewable Energy Conservation Plan Independent Science Advisors). 2010. *Recommendations of the DRECP Independent Science Advisors for the California Desert Renewable Energy Conservation Plan.* DRECP-1000-2010-008-F. Prepared for the Renewable Energy Action Team. October 2010.

DRECP ISP (Desert Renewable Energy Conservation Plan Independent Science Panel). 2012. *Recommendations of the DRECP Independent Science Panel.*

Elzinga, Caryl L., Daniel W. Salzer, John W. Willoughby, and James P. Gibbs. 2001. *Monitoring Plant and Animal Populations.* Malden, Massachusetts: Blackwell Sciences Inc.

Epps, C.W., V.C. Bleich, J.D. Wehausen, and S.G. Torres. 2003. "Status of Bighorn Sheep in California." *Desert Bighorn Council Transactions* 47:20–35.

Gagnon, J.W., C.D. Loberger, S.C. Sprague, M. Priest, K. Ogren, S. Boe, E. Kombe, and R.E. Schweinsburg. 2013. "Evaluation of Desert Bighorn Sheep Overpasses Along US Highway 93 in Arizona, USA." Proceedings of the 2013 International Conference on Ecology and Transportation.

Gunderson, L. 1999. "Stepping Back: Assessing for Understanding in Complex Regional Systems." In *Bioregional Assessments: Science at the Crossroads of Management and Policy*, edited by K.N. Johnson, F. Swanson, M. Herring, and S. Greene, 27–40. Washington, D.C.: Island Press.

Heilman, G.E., Jr., J.R. Strittholt, N.C. Slosser, and D.A. DellaSala. 2002. "Forest Fragmentation of the Conterminous United States: Assessing Forest Intactness through Road Density and Spatial Characteristics." *Bioscience* 52(5):411–422. http://consbio.org/products/publications/forest-fragmentation-of-the-conterminous-united-states-assessing-forest-intactness-through-road-density-and-spatial-char.

Holling, C.S. 1978. *Adaptive Environmental Assessment and Management*. New York, New York: John Wiley and Sons.

Ivey, G.L., B.D. Dugger, C.P. Herziger, M.L. Casazza, and J.P. Feskes. 2014. "Distribution, Abundance, and Migration Timing of Greater and Lesser Sandhill Cranes Wintering in the Sacramento-San Joaquin River Delta Region of California." *Proceedings of the North American Crane Workshop* 12:1–11.

Lee, Peter, Dmitry Aksenov, Lars Laestadius, Ruth Nogueron, Wynet Smith. 2003. *Canada's Large Intact Forest Landscapes*. Edmonton, Alberta: Global Forest Watch Canada.

Loarie, S.R., B.E. Carter, K. Hayhoe, Sean McMahon, R. Moe, C.A. Knight, and D. Ackerly. 2009. "Climate Change and the Future of California's Endemic Flora." *PLOS ONE* 3(6):e2502. DOI: 10.1371/journal.pne.0002502.

Lowe, W.H. 2003. "Linking Dispersal to Local Population Dynamics: A Case Study Using a Headwater Salamander System." *Ecology* 84(3):2145–2154.

Lowe, W.H., and D.T. Bolger. 2002. "Local and Landscape-Scale Predictors of Salamander Abundance in New Hampshire Headwater Streams." *Conservation Biology* 16(1):183–193.

MacKenzie, D.I., J.D. Nichols, G.B. Lachman, S. Droege, J.A. Royle, and C.A. Langtimm. 2002. "Estimating Site Occupancy Rates When Detection Probabilities are Less Than One." *Ecology* 83:2248–2255.

MacKenzie, D.I., J.D. Nichols, J.E. Hines, M.G. Knutson, and A.B. Franklin. 2003. "Estimating Site Occupancy, Colonization, and Local Extinction When a Species Is Detected Imperfectly." *Ecology* 84(8):2200–2207.

MacKenzie, D.I., J.D. Nichols, J.A. Royle, K.H. Pollock, L.L. Bailey, and J.E. Hines. 2006. *Occupancy Estimation and Modeling: Inferring Patterns and Dynamics of Species Occurrence*. Amsterdam: Academic Press.

Manning, J.A. 2009. *Burrowing Owl Population Size in the Imperial Valley, California: Survey and Sampling Methodologies for Estimation*. Final report. Submitted to Imperial Irrigation District by Bloom Biological Inc. Santa Ana, California: Bloom Biological Inc. April 15, 2009.

McKenny, H.C., W.S. Keeton, and T.M. Donovan. 2006. "Effects of Structural Complexity Enhancement on Eastern Red-Backed Salamander (*Plethodon cinereus*) Populations in Northern Hardwood Forests." *Forest Ecology and Management* 230:186–196.

Miller, B.W. 2001. "A Method for Determining Relative Activity of Free Flying Bats Using a New Activity Index for Acoustic Monitoring." *Acta Chiropterologica* 3:93–105.

Nielson, Ryan M., Lindsay McManus, Troy Rintz, and Lyman L. McDonald. 2010. *Results of the 2010 Survey of Golden Eagles (Aquila chrysaetos) in the Western United States.* Prepared for U.S. Fish and Wildlife Service. January 7, 2011.

NPS (National Park Service). 2014. "Disease Outbreak in Desert Bighorn Sheep." Last updated April 2, 2014. Accessed August 2014. http://www.nps.gov/moja/naturescience/desert-bighorn-sheep.htm.

Pagel, Joel E., Diana M. Whittington, and George T. Allen. 2010. *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations*. U.S. Fish and Wildlife Service. February 2010.

Potapov, P., A. Yaroshenko, S. Turubanova, M. Dubinin, L. Laestadius, C. Thies, D. Aksenov, A. Egorov, Y. Yesipova, I. Glushkov, M. Karpachevskiy, A. Kostikova, A. Manisha, E. Tsybikova, and I. Zhuravleva. 2008. "Mapping the World's Intact Forest Landscapes by Remote Sensing." *Ecology and Society* 13(2):51. http://www.ecologyandsociety.org/vol13/iss2/art51/.

Public Law 92-195. Wild Free-Roaming Horses and Burros Act of 1971.

Public Law 100-691. Federal Cave Resources Protection Act of 1988.

Public Law 109-58. Energy Policy Act of 2005.

Public Law 112-74. Fiscal Year 2012 Appropriations Act.

Reiter, M.E., W.D. Shuford, K.M. Strum, C.M. Hickey, and G.W. Page. 2012. *A Monitoring Plan for Wintering Shorebirds in Coastal California and Northern Baja California, Mexico*. Version 1.0. Report to the California Landscape Conservation Cooperative. Petaluma, Califonria: PRBO Conservation Science. April 2012.

Riddle, Jason D., Kenneth H. Pollock, and Theodore R. Simons. 2010. "An Unreconciled Double-Observer Method for Estimating Detection Probability and Abundance." *Auk* 127(4):841–849.

S 138. California Desert Protection Act of 2011. 112th Congress, 2011–2013.

Smith, C.K., and J.W. Petranka. 2000. "Monitoring Terrestrial Salamanders: Repeatability and Validity of Area-Constrained Cover Object Searches." *Herpetology* 34:547–557.

Snyder, M.A., and L.C. Sloan. 2005. "Transient Future Climate over the Western United States Using a Regional Climate Model." *Earth Interactions* 9: Article No. 11.

Snyder, M.A., L.C. Sloan, and J.L. Bell. 2004. "Modeled Regional Climate Change in the Hydrologic Regions of California: A CO_2 Sensitivity Study." *Journal of the American Water Resources Association* 40:591–601.

Stahlschmidt, Z.R., D.F. DeNardo, J.N. Holland, B.P. Kotler, and M. Kruse-Peeples. 2011. "Tolerance Mechanisms in North American Deserts: Biological and Societal Approaches to Climate Change." *Journal of Arid Environments* 75(2011):681–687.

Stralberg, D., D. Jongsomjit, C.A. Howell, M.A. Snyder, J.D. Alexander, J.A. Wiens, T.L. Root. 2009. "Re-Shuffling of Species with Climate Disruption: A No-Analog Future for California Birds?" *PLOS ONE* 4(9): e6825. DOI:10.1371/journal.pone.0006825.

Strittholt, J.R., D.A. DellaSala, and H. Jiang. 2006. "Status of Mature and Old-Growth Forests in the Pacific Northwest." *Conservation Biology* 20:363–374.

Toevs, Gordon R., Jason J. Taylor, Carol S. Spurrier, W. Craig MacKinnon, and Matthew R. Bobo. 2011. *Bureau of Land Management Assessment, Inventory, and Monitoring Strategy: For Integrated Renewable Resources Management*. BLM/WO/GI-11/014+1735. Denver, Colorado: Bureau of Land Management, National Operations Center. August 2011.

Tracy, C.R., R. Averill-Murray, W. I. Boarman, D. Delehanty, J. Heaton, E. McCoy, D. Morafka, K. Nussear, B. Hagerty, P. Medica. 2004. *Desert Tortoise Recovery Plan Assessment*. October 2004. Accessed June 2014. http://www.fws.gov/nevada/desert_tortoise/dtro/.

U.S. Air Force. 2009. *Monitoring Program Design for Mohave Ground Squirrels at Edwards AFB*. PowerPoint slides. Prepared by Theodore Donn, Tetra Tech, and Environmental Management, Edwards Air Force Base.

USFWS (U.S. Fish and Wildlife Service). 2008. *Strategic Habitat Conservation Handbook: A Guide to Implementing the Technical Elements of Strategic Habitat Conservation (Version 1.0)*. Report from the National Technical Assistance Team. Washington, D.C.: USFWS. February 11, 2008.

USFWS. 2009. *Desert Tortoise (Mojave Population) Field Manual* (Gopherus agassizii). December 2009. Sacramento, California: USFWS, Region 8.

USFWS. 2011. *Revised Recovery Plan for the Mojave Population of the Desert Tortoise* (Gopherus agassizii). May 6, 2011. Sacramento, California: USFWS, Region 8.

USGS (U.S. Geological Survey). 2006. *Strategic Habitat Conservation*. Final report of the National Ecological Assessment Team. Washington, D.C.: USGS. July 2006.

Walters, C.J., 1986. *Adaptive Management of Renewable Resources*. New York, New York: MacMillan Publishing Company.

Walters, C.J., and C.S. Holling. 1990. "Large-Scale Management Experiments and Learning by Doing." *Ecology* 71:2060–2068.

Williams, B.K., R.C. Szaro, and C.D. Shapiro. 2009. *Adaptive Management, The U.S. Department of the Interior Technical Guide*. Washington D.C.: U.S. Department of the Interior, Adaptive Management Working Group. http://www.doi.gov/ppa/upload/TechGuide-WebOptimized-2.pdf.

Williams, B.K., and E.D. Brown. 2012. *Adaptive Management, The U.S. Department of the Interior Applications Guide*. Washington D.C.: U.S. Department of the Interior, Adaptive Management Working Group. April 2012. http://www.doi.gov/ppa/upload/DOI-Adaptive-Management-Applications-Guide-WebOptimized.pdf.

Chapter II.4 Alternative 1

16 U.S.C. 1531–1544. Endangered Species Act of 1973, as amended.

43 CFR 3809. Surface Management.

California Fish and Game Code, Section 2800–2835. Natural Community Conservation Planning Act. 1991.

Public Law 88-577. Wilderness Act of 1964.

Chapter II.5 Alternative 2

16 U.S.C. 1531–1544. Endangered Species Act of 1973, as amended.

43 CFR 3809. Surface Management.

43 U.S.C. 1701–1785. Federal Land Policy and Management Act of 1976, as amended.

California Fish and Game Code, Section 2800–2835. Natural Community Conservation Planning Act. 1991.

Public Law 88-577. Wilderness Act of 1964.

Chapter II.6 Alternative 3

16 U.S.C. 1531–1544. Endangered Species Act of 1973, as amended.

43 CFR 3809. Surface Management.

California Fish and Game Code, Section 2800–2835. Natural Community Conservation Planning Act. 1991.

Public Law 88-577. Wilderness Act of 1964.

Chapter II.7 Alternative 4

36 CFR Part 800. Protection of Historic Properties, as amended.

43 CFR 3809. Surface Management.

BLM and USFS (Bureau of Land Management and U.S. Forest Service). 2008. *Final Programmatic Environmental Impact Statement for Geothermal Leasing in the Western United States.* October 2008. http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS_REALTY_AND_RESOURCE_PROTECTION_/energy/geothermal_eis/final_programmatic.Par.41814.File.dat/Volume_I_FINAL.pdf.

California Fish and Game Code, Section 2800–2835. Natural Community Conservation Planning Act. 1991.

Public Law 88-577. Wilderness Act of 1964.

Chapter II.8 Alternatives Considered but Not Carried Forward

California Office of the Governor. 2012. Conservation Planning Process – Renewable Energy context material. http://www.drecp.org/meetings/2012-06-26_meeting/background/04_Conservation%20Planning%20Process%20-%20Renewable%20Energy_context%20material%20(Office%20of%20the%20Governor).pdf. Accessed May 28, 2014.

CalWEA (California Wind Energy Association). 2012a. Proposed DRECP Scenario for Wind Energy Resources. Submitted April 17.

CEC (California Energy Commission). 2011. Renewable Power in California: Status and Issues. Publication Number: CEC-150-2011-002-LCF-REV1. December 2011.

CEC. 2012a. Staff 2040 Acreage Calculator Scenario in Response to Comments from Sierra Club. Dated April 24.

CEC. 2012b. 2011 Integrated Energy Policy Report, Lead Commissioner Final Report. Publication Number: CEC-150-2011-001-LCF. February 2012.

CEC. 2012c. Energy Commission 2012 IEPR Update Chapter 5 (CEC-100-2012-001-CMF) http://www.energy.ca.gov/2012publications/CEC-100-2012-001/CEC-100-2012-001-CMF.pdf).

CEERT (Center for Energy Efficiency and Renewable Technologies). 2011a. Comments on the Preliminary Conservation Strategy for the Desert Renewable Energy Conservation Strategy. Dated December 1.

County of Riverside. 2011. Riverside County's Position on the Desert Renewable Energy Conservation Plan. Dated February 8.

DRECP (Desert Renewable Energy Conservation Plan). 2010. Planning Agreement by and among California Department of Fish and Game, California Energy Commission, United States Bureau of Land Management, and United States Fish and Wildlife Service for the Desert Renewable Energy Conservation Plan. May 2010.

DRECP. 2011a. DRECP Memo regarding Riverside County's Position on the Desert Renewable Energy Conservation Plan. Dated March 17.

DRECP. 2011b. Appendix A-1 Metadata for the Preliminary Conservation Strategy Map. Dated October 26, 2011.

DRECP. 2012a. Overview of DRECP Alternatives Briefing Materials: DRECP Stakeholders Committee Meeting. July 25, 2012.

DRECP. 2012b. Overview of Preliminary Plan-Wide Biological Reserve Design and Renewable Energy Development Scenarios: DRECP Stakeholders Meeting April 25/26, 2012.

DRECP. 2012c. Preliminary Draft DRECP Species Statistical Model: Golden Eagle. March 2012.

DRECP. 2012d. Preliminary Draft DRECP Species Statistical Model: Bald Eagle. March 2012.

DRECP. 2012e. Preliminary Draft DRECP Species Statistical Model: California Condor. March 2012.

DRECP. 2012f. Overview of Preliminary Plan-Wide Biological Reserve Design and Renewable Energy Development Scenarios: Supplemental Materials. http://www.drecp.org/meetings/2012-04-25-26_meeting/presentations/06a_DRECP_Supplemental_Materials.pdf.

Imperial County Farm Bureau. 2012. Imperial County Agriculture. http://www.icfb.net/countyag.html. Accessed December 2012.

Linvill, Carl, John Candelaria, and Ashley Spalding. 2011. Western Grid 2050: Contrasting Futures, Contrasting Fortunes.

NREL (National Renewable Energy Laboratory). 2010. Solar Power and the Electric Grid, Energy Analysis (Fact Sheet), Golden, Colo., March. http://www.nrel.gov/docs/fy10osti/45653.pdf.

Russell, Jeffrey and Steven Weissman. 2012. California's Transition to Local Renewable Energy: 12,000 Megawatts by 2020: A report on the Governor's Conference on Local Renewable Energy. June 7. http://www.law.berkeley.edu/files/ccelp/CA_Transition_to_Local_Renewable_Energy.pdf. Accessed May 30, 2014.

Sierra Club. 2012a. Analysis of the CEC-DRECP Spreadsheet Model and Scenarios. February 10, 2012.

Sierra Club. 2012b. Sierra Club comments on acreage calculator. July 11 via email.

Species Profiles. 2012a. Birds: California Condor (*Gymnogyps californianus*). Draft March 2.

Species Profiles. 2012b. Birds: Bald Eagle (*Haliaeetus leucocephalus*). Draft March 2.

Species Profiles. 2012c. Birds: Golden Eagle (*Aquila chysaetos*). Draft March 2.

Vidaver, David. 2011. Renewable Portfolio Standard and Acreage Calculator. http://www.drecp.org/meetings/2011-12-05_meeting/presentations/D-Vidaver_Calculator_Description-2011-11-29.pdf. Accessed December 2012.

Zichella, Carl and Johnathan Hladik. 2013. Renewable Energy and Transmission Siting: Pre-publication Draft. http://www.energy.ca.gov/2013_energypolicy/documents/2013-05-07_siting_workshop/comments/NRDC_Combined_Comments_TN-70973_TN-70974_TN-70975.pdf. Accessed June 2013.

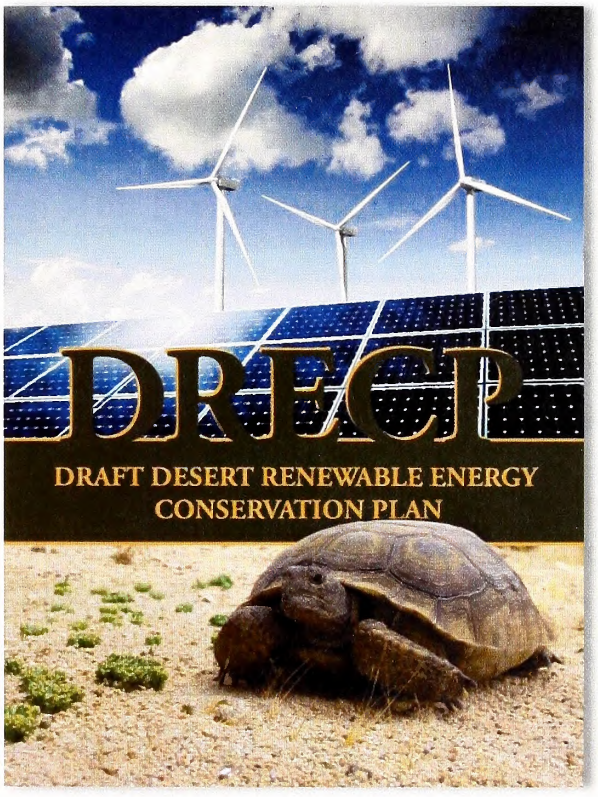
Volume III

DRAFT

Desert Renewable Energy Conservation Plan (DRECP) and Environmental Impact Report/Environmental Impact Statement

Volume III: Environmental Setting/Affected Environment

Part 1 of 2: Chapters III.1 through III.6



Prepared by:

California Energy Commission

California Department of Fish and Wildlife

U.S. Bureau of Land Management

U.S. Fish and Wildlife Service

SEPTEMBER 2014

Printed on 30% post-consumer recycled material.

TABLE OF CONTENTS – VOLUME III

CHAPTERS III.1 THROUGH III.6

Section **Page No.**

III.1 ENVIRONMENTAL SETTING/AFFECTED ENVIRONMENT III.1-1
III.1.1 Overview of the Plan Area III.1-1
III.1.2 Ecoregion Subareas Within the Plan Area III.1-5
III.1.3 Definition of Environmental Baseline III.1-5
III.1.3.1 CEQA Environmental Setting III.1-5
III.1.3.2 NEPA Affected Environment III.1-6
III.1.3.3 Environmental Baseline Used in This Document III.1-6
III.1.4 Baseline Outside the Plan Area III.1-13
III.1.5 Organization of the Environmental Baseline Chapters III.1-13
III.2 AIR QUALITY III.2-1
III.2.1 Regulatory Setting III.2-1
III.2.1.1 Federal III.2-1
III.2.1.2 State III.2-13
III.2.1.3 Toxic Air Contaminants III.2-13
III.2.1.4 State Implementation Plan III.2-16
III.2.1.5 California Environmental Quality Act III.2-19
III.2.1.6 Local III.2-19
III.2.2 Geographic Setting III.2-23
III.2.3 Air Quality Baseline Analysis for the Plan Area III.2-23
III.2.3.1 Ozone III.2-23
III.2.3.2 PM10 ..... III.2-24
III.2.3.3 PM2.5 ..... III.2-24
III.2.3.4 Nitrogen Dioxide III.2-24
III.2.3.5 Sulfur Dioxide III.2-25
III.2.3.6 Carbon Monoxide III.2-25
III.2.3.7 Lead III.2-25
III.2.4 Air Quality within the Plan Area III.2-25
III.2.4.1 Air Quality – Federal Standards III.2-25
III.2.4.2 Air Quality – State Standards III.2-38
III.2.5 Air Quality within the DRECP Ecoregion Subareas III.2-46
III.2.5.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.2-46
III.2.5.2 Imperial Borrego Valley Ecoregion Subarea III.2-55

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.2.5.3 Kingston and Funeral Mountains Ecoregion Subarea III.2-55
III.2.5.4 Mojave and Silurian Valley Ecoregion Subarea III.2-56
III.2.5.5 Owens River Valley Ecoregion Subarea III.2-56
III.2.5.6 Panamint Death Valley Ecoregion Subarea III.2-57
III.2.5.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.2-57
III.2.5.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.2-58
III.2.5.9 Providence and Bullion Mountains Ecoregion Subarea III.2-59
III.2.5.10 West Mojave and Eastern Slopes Ecoregion Subarea III.2-59
III.2.6 Affected Environment for the Natural Community Conservation Plan III.2-60
III.2.7 Affected Environment for the General Conservation Plan III.2-60
III.2.8 Baseline Emissions for the Plan Area III.2-60
III.2.9 Air Quality Outside of Plan Area III.2-60
III.2.9.1 Transmission III.2-60
III.2.9.2 Bureau of Land Management Land Use Plan Amendment Decisions III.2-62

III.3 METEOROLOGY AND CLIMATE CHANGE III.3-1
III.3.1 Regulatory Setting III.3-4
III.3.1.1 Federal III.3-4
III.3.1.2 State III.3-5
III.3.2 Climate Change Trends for the State and Plan Area III.3-6
III.3.2.1 Understanding Climate Change III.3-6
III.3.2.2 Statewide Greenhouse Gas Inventory III.3-8
III.3.2.3 Climate Change Trends for the State III.3-8
III.3.2.4 Climate Change Trends for the Plan Area III.3-9
III.3.3 Meteorology and Climate—Greenhouse Gas Baseline Analysis for the Plan Area III.3-10
III.3.3.1 GHG Emissions from Existing Renewable Energy Projects III.3-11
III.3.3.2 Net GHG Emissions from Existing Renewable Energy Projects III.3-12

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.3.4 Meteorology and Climate—Greenhouse Gas Baseline for Outside the Plan Area III.3-12
III.3.4.1 Transmission Outside the Plan Area III.3-12
III.3.4.2 Bureau of Land Management Land Use Plan Amendment Decisions Outside the Plan Area III.3-12

III.4 GEOLOGY AND SOILS III.4-1
III.4.1 Regulatory Setting III.4-1
III.4.1.1 Federal III.4-1
III.4.1.2 State III.4-1
III.4.1.3 County Plans III.4-2
III.4.2 Geology and Soils within the Plan Area III.4-4
III.4.2.1 Geomorphology and Surficial Geology III.4-4
III.4.2.2 Soils III.4-17
III.4.3 Faulting and Seismicity III.4-22
III.4.4 Other Geologic Hazards III.4-46
III.4.4.1 Ground Shaking III.4-46
III.4.4.2 Liquefaction III.4-47
III.4.4.3 Subsidence III.4-48
III.4.4.4 Volcanic Activity III.4-48
III.4.5 Geology and Soils in Bureau of Land Management Land Use Plan Amendment III.4-48
III.4.6 Geology and Soils in Natural Community Conservation Plan Area III.4-49
III.4.7 Geology and Soils in General Conservation Plan Area III.4-49
III.4.8 Geology and Soils Outside the Plan Area III.4-49
III.4.8.1 Transmission Out-of-Plan Area III.4-49
III.4.8.2 Bureau of Land Management Land Use Plan Amendment Decisions Outside Plan Area III.4-57

III.5 FLOOD HAZARD, HYDROLOGY, AND DRAINAGE III.5-1
III.5.1 Regulatory Setting III.5-1
III.5.1.1 Federal III.5-1
III.5.1.2 State III.5-6
III.5.1.3 Local III.5-8
III.5.2 Flood Hazard, Hydrology, and Drainage Within the Plan Area III.5-8
III.5.2.1 FEMA Flood Hazards III.5-14
III.5.2.2 Water Quality in the Plan Area III.5-14

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.5.3 Wild and Scenic Rivers Within the Plan Area III.5-17
III.5.4 Hydrologic Regions, Basins and Sub-Basins Within the Plan Area III.5-17
III.5.4.1 Characterization of Perennial, Intermittent, and Ephemeral Streams III.5-17
III.5.4.2 Streamflows for Perennial, Intermittent, and Ephemeral Streams III.5-19
III.5.5 Protecting the Water Quality and Beneficial Uses of Plan Area Waters III.5-24
III.5.5.1 Beneficial Uses III.5-24
III.5.5.2 Water Quality Objectives and Effluent Limitations III.5-27
III.5.6 Flood Hazard, Hydrology, and Drainage Areas Within Plan Area by Ecoregion Subarea III.5-28
III.5.6.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.5-28
III.5.6.2 Imperial Borrego Valley Ecoregion Subarea III.5-29
III.5.6.3 Kingston and Funeral Mountains Ecoregion Subarea III.5-29
III.5.6.4 Mojave and Silurian Valley Ecoregion Subarea III.5-29
III.5.6.5 Owens River Valley Ecoregion Subarea III.5-29
III.5.6.6 Panamint Death Valley Ecoregion Subarea III.5-29
III.5.6.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.5-30
III.5.6.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.5-30
III.5.6.9 Providence and Bullion Mountains Ecoregion Subarea III.5-30
III.5.6.10 West Mojave and Eastern Slopes Ecoregion Subarea III.5-30
III.5.7 BLM LUPA Plan Area III.5-30
III.5.8 NCCP Plan Area III.5-31
III.5.9 General Conservation Plan (GCP) III.5-31
III.5.9.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea III.5-31
III.5.9.2 Imperial Borrego Valley Ecoregion Subarea III.5-31

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.5.9.3 Kingston and Funeral Mountains Ecoregion Subarea III.5-31
III.5.9.4 Mojave and Silurian Valley Ecoregion Subarea III.5-32
III.5.9.5 Owens River Valley Ecoregion Subarea III.5-32
III.5.9.6 Panamint Death Valley Ecoregion Subarea III.5-32
III.5.9.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.5-32
III.5.9.8 Piute Valley and Sacramento Mountains Ecoregion Subarea III.5-32
III.5.9.9 Providence and Bullion Mountains Ecoregion Subarea III.5-33
III.5.9.10 West Mojave and Eastern Slopes Ecoregion Subarea III.5-33
III.5.10 Flood Hazard, Hydrology, and Drainage Outside of the Plan Area III.5-33
III.5.10.1 Flood Hazard, Hydrology, and Drainage – Transmission Outside of Plan Area III.5-33
III.5.10.2 BLM LUPA III.5-35

III.6 GROUNDWATER, WATER SUPPLY, AND WATER QUALITY III.6-1
III.6.1 Regulatory Setting III.6-1
III.6.1.1 Federal III.6-1
III.6.1.2 State III.6-4
III.6.1.3 Local III.6-5
III.6.2 Groundwater Resources within the Plan Area III.6-6
III.6.2.1 Adjudicated Basins III.6-7
III.6.2.2 Sole-Source Aquifers III.6-25
III.6.2.3 Basins Tributary to the Colorado River III.6-25
III.6.3 Hydrogeological and Water Quality Framework III.6-26
III.6.3.1 Aquifer Characteristics III.6-26
III.6.3.2 Groundwater Basin Boundaries III.6-30
III.6.3.3 Water Inflows and Outflows III.6-35
III.6.3.4 Subsidence III.6-57
III.6.3.5 Water Quality III.6-63
III.6.3.6 Imperial Borrego Valley Ecoregion Subarea III.6-68
III.6.3.7 Kingston and Funeral Mountains Ecoregion Subarea III.6-70

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

III.6.3.8 Mojave and Silurian Valley Ecoregion Subarea....III.6-73
III.6.3.9 Owens River Valley Ecoregion Subarea....III.6-76
III.6.3.10 Panamint Death Valley Ecoregion Subarea....III.6-78
III.6.3.11 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea....III.6-80
III.6.3.12 Piute Valley and Sacramento Mountains Ecoregion Subarea....III.6-84
III.6.3.13 Providence and Bullion Mountains Ecoregion Subarea....III.6-86
III.6.3.14 West Mojave and Eastern Slopes Ecoregion Subarea....III.6-88
III.6.4 Bureau of Land Management Land Use Plan Amendment....III.6-91
III.6.5 Natural Community Conservation Planning Existing Conditions....III.6-94
III.6.6 General Conservation Land Plan Affected Environment....III.6-98
III.6.7 Groundwater, Water Supply, and Water Quality Outside of Plan Area....III.6-101
III.6.7.1 Transmission Out of Plan Area....III.6-101
III.6.7.2 BLM LUPA Outside of Plan Area....III.6-107

TABLE OF CONTENTS (CONTINUED)

Page No.

TABLES

III.1-1 Summary of Existing Renewable Energy (RE) Projects in the Plan Area as of October 15, 2013 ..... III.1-8
III.2-1 Attainment Periods III.2-3
III.2-2 Ambient Air Quality Standards III.2-4
III.2-3 Class I Areas by Ecoregion Subarea III.2-8
III.2-4 Ambient Air Quality Summary with Respect to Federal Standards – Great Basin Valleys Air Basin III.2-27
III.2-5 Ambient Air Quality Summary with Respect to Federal Standards – Mojave Desert Air Basin III.2-39
III.2-6 Ambient Air Quality Summary with Respect to Federal Standards – Salton Sea Air Basin III.2-39
III.2-7 Ambient Air Quality Summary with Respect to Federal Standards – San Diego Air Basin III.2-40
III.2-8 Ambient Air Quality Summary with Respect to State Standards – Great Basin Valleys Air Basin III.2-47
III.2-9 Ambient Air Quality Summary with Respect to State Standards – Mojave Desert Air Basin III.2-47
III.2-10 Ambient Air Quality Summary with Respect to State Standards – Salton Sea Air Basin III.2-48
III.2-11 Ambient Air Quality Summary with Respect to State Standards – San Diego Air Basin III.2-49
III.2-12 DRECP Ecoregion Subarea Air Basins (acres) III.2-50
III.2-13 2013 Attainment Status for the South Coast Air Basin III.2-61
III.2-14 2013 Attainment Status for the San Joaquin Valley Air Basin III.2-62
III.2-15 BLM LUPA Land Outside the Plan Area Air Basins (acres) III.2-63
III.3-1 Global Warming Potentials and Atmospheric Lifetimes (Years) III.3-7
III.3-2 2011 California GHG Inventory III.3-8
III.3-3 California Existing GHG Emission Rates from Electricity Use III.3-11
III.4-1 Soil Types and Textures within the Plan Area III.4-17
III.4-2 Largest Faults within the Plan Area III.4-45
III.4-3 Earthquakes within the Plan Area with a Magnitude 6.0 or Higher III.4-47
III.5-1 Comparison of Flood Characteristics for Alluvial Fans and Banked Rivers III.5-19
III.5-2 RWQCB Basin Plan Beneficial Uses III.5-24

TABLE OF CONTENTS (CONTINUED)

Page No.

III.5-3 Stream Crossings Outside of Plan Area III.5-34
III.6-1 California Department of Water Resources Basins in the DRECP III.6-8
III.6-2 California Department of Water Resources Basins in the Cadiz Valley and Chocolate Mountains Ecoregion Subarea of the DRECP III.6-67
III.6-3 California Department of Water Resources Basins in the Imperial Borrego Valley Ecoregion Subarea of the DRECP III.6-69
III.6-4 Department of Water Resources Basins in the Kingston and Funeral Mountains Ecoregion Subarea of the DRECP III.6-70
III.6-5 California Department of Water Resources Basins in the Mojave and Silurian Valley Ecoregion Subarea of the DRECP III.6-74
III.6-6 California Department of Water Resources Basins in the Owens River Valley Ecoregion Subarea of the DRECP III.6-77
III.6-7 California Department of Water Resources Basins in the Panamint Death Valley Ecoregion Subarea of the DRECP III.6-79
III.6-8 California Department of Water Resources Basins in the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea of the DRECP III.6-81
III.6-9 California Department of Water Resources Basins in the Piute Valley and Sacramento Mountains Ecoregion Subarea of the DRECP III.6-84
III.6-10 California Department of Water Resources Basins in the Providence and Bullion Mountains Ecoregion Subarea of the DRECP III.6-86
III.6-11 California Department of Water Resources Basins in the West Mojave and Eastern Slopes Ecoregion Subarea of the DRECP III.6-89
III.6-12 California Department of Water Resources Basins within BLM LUPA Affected Environment III.6-91
III.6-13 California Department of Water Resources Basins within NCCP Affected Environment III.6-95
III.6-14 California Department of Water Resources Basins within GCP Affected Environment III.6-98
III.6-15 Department of Water Resources Basins in BLM LUPA Affected Environment but Outside the Plan Area III.6-107

TABLE OF CONTENTS (CONTINUED)

Page No.

FIGURES

III.1-1 DRECP Plan Area and Ecoregion Subareas III.1-3
III.1-2a Existing Renewable Energy Projects in DRECP Area (Western Portion)..... III.1-9
III.1-2b Existing Renewable Energy Projects in DRECP Area (Eastern Portion) III.1-11
III.2-1 Federal Class I Areas III.2-11
III.2-2 Air District Boundaries III.2-17
III.2-3 Air Basins III.2-21
III.2-4 1997 Federal 8-hour Ozone Attainment Status III.2-29
III.2-5 2008 Federal 8-hour Ozone Attainment Status III.2-31
III.2-6 Federal PM10 Attainment Status.....III.2-33
III.2-7 Federal PM2.5 Attainment Status.....III.2-35
III.2-8 State PM2.5 Attainment Status.....III.2-45
III.2-9 State H_2S Attainment Status.....III.2-53
III.4-1 Surficial Geology III.4-7
III.4-2 Dune Systems and Sand Transport Corridors within the Plan Area.....III.4-19
III.4-3 Potentially Corrosive Soils within the Plan Area.....III.4-23
III.4-4 Earthquake Faults within the Plan Area.....III.4-25
III.4-5 Earthquake Faults within the Imperial Borrego Valley Ecoregion Subarea III.4-27
III.4-6 Earthquake Faults within the Kingston and Funeral Mountains Ecoregion Subarea III.4-29
III.4-7 Earthquake Faults within the Mojave and Silurian Valley Ecoregion Subarea III.4-31
III.4-8 Earthquake Faults within the Owens River Valley Ecoregion Subarea III.4-33
III.4-9 Earthquake Faults within the Panamint Death Valley Ecoregion Subarea III.4-35
III.4-10 Earthquake Faults within the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea III.4-37
III.4-11 Earthquake Faults within the Providence and Bullion Mountains Ecoregion Subarea III.4-39
III.4-12 Earthquake Faults within the West Mojave and Eastern Slopes Ecoregion Subarea III.4-41
III.4-13 Peak Horizontal Ground Acceleration within the Plan Area (Lands with a 10% probability of exceedance within 50 years).....III.4-43

TABLE OF CONTENTS (CONTINUED)

Page No.

III.5-1 Linear and Areal Surface Water Resources and Watersheds in the Plan Area III.5-9
III.5-2 Named Water Bodies, Wetlands, and Flood Hazard Areas in the Plan Area III.5-11
III.5-3 Springs and Wild and Scenic Rivers in the Plan Area III.5-15
III.5-4 Stream Gages in the Plan Area III.5-21
III.6-1 Groundwater Basins and Data Availability III.6-23
III.6-2 Groundwater Basins Coupled or Possibly Tributary to Colorado River III.6-27
III.6-3 Groundwater Basins with Internal Fault Barriers III.6-31
III.6-4 Distribution of Reported Storage Capacity III.6-33
III.6-5 Distribution of Average Reported Irrigation and Municipal Well Yields III.6-37
III.6-6 Groundwater Basins That Receive Substantial Surface Water Supplies III.6-39
III.6-7 Estimated Average Annual Recharge by Ecoregion Subarea Assuming 0- to 15-percent of Precipitation Runoff Becomes Recharge III.6-43
III.6-8 Springs, Seeps and Playas III.6-47
III.6-9 Groundwater Basins with Evidence of Hydraulic Interconnection III.6-51
III.6-10 Cultivated Cropland III.6-53
III.6-11 Developed and Disturbed Lands III.6-55
III.6-12 Well Locations III.6-59
III.6-13 Estimated Groundwater Use III.6-61
III.6-14 Average Groundwater Salinity III.6-65

ACRONYM LIST

AB	Assembly Bill
ACEC	Areas of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
AFB	Air Force Base
AFC	Application for Certification
ALUCP	Airport Land Use Compatibility Plan
AMSL	above mean sea level
ANF	Angeles National Forest
APCD	air pollution control district
APE	Area of Potential Effects
AQMD	air quality management district
ARRA	American Recovery and Reinvestment Act
AVWS	audio visual warning systems
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMCP	Bird and Mammal Conservation Program
BNSF	Burlington Northern and Santa Fe Railway
BOR	Bureau of Reclamation
BSTRC	Bob Stump Training Range Complex
C-AMA	California-Arizona Maneuver Area
CARB	California Air Resources Board
CDCA	California Desert Conservation Area
CDFW	California Department of Fish and Wildlife
CDWR	California Department of Water Resources
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code Federal Regulations
CGS	California Geological Survey
CHL	California Historical Landmark
CHSC	California Health and Safety Code
CLNWC	China Lake Naval Weapons Center
CMAGR	Chocolate Mountain Aerial Gunnery Range
CMAs	Conservation and Management Actions
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level

CNPS	California Native Plant Society
CO	carbon monoxide
CO2	carbon dioxide
CPA	Conservation Planning Area
CPUC	California Public Utilities Commission
CRG	Cultural Resources Geodatabase
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CRS	Colorado River Substation
CSLC	California State Lands Commission
CVAG	Coachella Valley Association of Governments
CWA	Clean Water Act
DBCP	dibromochloropropane
DC	direct current
DDT	2-bis(pchloro-phenyl)ethane
DEM	Digital Elevation Model
DFAs	Development Focus Areas
DOD	Department of Defense
DOE	Department of Energy
DOGGR	California Department of Conservation, Division of Oil, Gas, and Geothermal Resources
DOI	Department of the Interior
DOT	Department of Transportation
DPS	distinct population segment
DRECP	Desert Renewable Energy Conservation Plan
DTC	Desert Training Center
DWMA	Desert Wildlife Management Area
EAFB	Edwards Air Force Base
EDB	ethylene dibromide
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EJ	Environmental Justice
EJSEAT	Environmental Justice Strategic Enforcement Assessment Tool
EO	Executive Order
EPA	Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency

FHWA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act
FMMP	Farmland Mapping and Monitoring Program
FPPA	Farmland Protection Policy Act
FUDS	Formerly Used Defense Sites
GCP	General Conservation Plan
GHG	greenhouse gas
GIS	geographic information system
GWP	global warming potential
HCP	Habitat Conservation Plan
HMA	Habitat Management Area
HSC	Health and Safety Code
I	Interstate
IID	Imperial Irrigation District
IM	Instruction Memoranda
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
KGRAs	known geothermal resource areas
LADWP	Los Angeles Department of Water and Power
LAUS	Local Area Unemployment Statistics
LCRV	Lower Colorado River Valley
LOS	Level of Service
LR2000	BLM Legacy Rehost System
LRO	Locally Rare Occurrence
LSAA	lake or streambed alteration agreement
LU	Land Use
LUPA	Land Use Plan Amendment
LWCs	lands with wilderness characteristics
LWU	Land and Water Use
MBTA	Migratory Bird Treaty Act
MCAGCC	Marine Corps Air Ground Combat Center
MCAS	Marine Corps Air Station
MCL	maximum contaminant level
MLD	Most Likely Descendant
MOA	Military Operations Areas
MOU	Memorandum of Understanding
MRDS	Mineral Resource Data System
MSA	Metropolitan Statistical Area
MSCP	Multiple Species Conservation Program
MSHCP	Multiple Species Habitat Conservation Plan

MT	metric ton
MTBE	methyl tertiary butyl ether
MTR	Military Training Routes
MW	megawatt
MWD	Metropolitan Water District
NAAQS	national ambient air quality standards
NAE	Native American Element
NAF	Naval Air Facility
NAWS	Naval Air Weapons Station
NCCP	Natural Community Conservation Plan
NCCPA	Natural Community Conservation Planning Act
NDETR	Nevada Department of Employment, Training, and Rehabilitation
NDMA	N nitrosodimethylamine
NECO	Northern and Eastern Colorado Desert Coordinated Management Plan
NEMO	Northern and Eastern Mojave
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NIFC	National Interagency Fire Center
NLCS	National Landscape Conservation System
NNL	National Natural Landmark
NO2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NPDES	National Pollution Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRT	National Recreation Trails
NSHT	National Scenic and Historic Trails
NTIR	National Trails Intermountain Region
NVCS	National Vegetation Classification Standard
NWI	National Wetland Inventory
OES	Office of Emergency Services
OHMVR	Off-Highway Motor Vehicle Recreation
OHP	Office of Historic Preservation
OHV	off-highway vehicle
OHWM	Ordinary High Water Mark
ORV	Outstandingly Remarkable Scenic Value
OSHA	Occupational Safety and Health Administration

PC	Predicted C
PEIS	Programmatic Environmental Impact Statement
PFYC	Potential Fossil Yield Classification
PM10	Respirable Particulate Matter
PM2.5	Fine Particulate Matter
POHI	California Point of Historical Interest
PRC	Public Resources Code
PRGTL	Pacific to Rio Grande Trail Landscape
PRPA	Paleontological Resources Preservation Act
PSU	Public Services and Utilities
PV	solar photovoltaic
QSA	Quantification Settlement Agreement
RAMP	Recreation Area Management Plan
RAQS	Regional Air Quality Strategy
RAS	Rangeland Administration System
RCRA	Resource Conservation Recovery Act
RCYBP	radiocarbon years before present
RE	Renewable Energy
REAT	Renewable Energy Action Team
RMP	Resource Management Plan
RNA	Research Natural Area
ROD	Record of Decision
ROW	right-of-way
RPS	Renewable Portfolio Standard
RWQCB	Regional Water Quality Control Board
SAA	Special Analysis Area
SANDAG	San Diego Association of Governments
SB	Senate Bill
SBNF	San Bernardino National Forest
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SEZ	Solar Energy Zone
SHPO	State Historic Preservation Officer
SIC	soil inorganic carbon
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act
SMS	Scenery Management System
SNR	State Natural Reserve
SO2	sulfur dioxide
SOC	soil organic carbon

SR	State Route
SRMA	Special Recreation Management Areas
SSA	Sole-source Aquifer
SVRA	State Vehicular Recreation Area
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCA	desert tortoise conservation areas
TCP	Traditional Cultural Properties
TDS	total dissolved solids
THPO	Tribal Historic Preservation Officers
TRTP	Tehachapi Renewable Transmission Project
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound
VRI	Visual Resource Inventory
VRM	Visual Resource Management
VSOI	visual sphere of influence
WA	Wilderness Area
WDR	Waste Discharge Requirement
WECO	Western Colorado Desert
WECS	wind energy conversion systems
WEMO	West Mojave Desert
WSA	wilderness study area

III.1 ENVIRONMENTAL SETTING/ AFFECTED ENVIRONMENT

Volume III presents an overview of the environmental setting of the Plan Area and provides context for the following issue-specific topics in 24 chapters:

III.2 Air Quality
III.3 Meteorology and Climate Change
III.4 Geology and Soils
III.5 Flood Hazard, Hydrology, and Drainage
III.6 Groundwater, Water Supply, and Water Quality
III.7 Biological Resources
III.8 Cultural Resources
III.9 Native American Interests
III.10 Paleontological Resources
III.11 Land Use and Policies
III.12 Agricultural Land and Production
III.13 BLM Lands and Realty—Rights-of-Way and Land Tenure
III.14 BLM Land Designations, Classifications, Allocations, and Lands With Wilderness Characteristics
III.15 Mineral Resources
III.16 Livestock Grazing
III.17 Wild Horses and Burros
III.18 Outdoor Recreation
III.19 Transportation and Public Access
III.20 Visual Resources
III.21 Noise and Vibration
III.22 Public Safety and Services
III.23 Socioeconomics and Environmental Justice
III.24 Department of Defense Lands and Operations
III.25 Literature Cited

III.1.1 Overview of the Plan Area

The geographic scope of the information presented in this volume is primarily within the Desert Renewable Energy Conservation Plan (DRECP or Plan) boundaries, except for the analysis of transmission and Bureau of Land Management (BLM) plan amendments outside of the Plan Area (see Volume II, Chapter II.3). The Baseline Biology Report, Appendix Q, considers a much broader area than the DRECP boundaries and serves as background for the affected environment. Within this report, profiles of species provide information regarding their habitat inside and outside the Plan Area. The boundary of the Plan Area is used for analysis in all disciplines because renewable energy development could occur throughout the area, and the Conservation and Management Actions would be implemented across the Plan Area.

The Plan Area covers more than 35,000 square miles and spans the California deserts and adjacent areas from Imperial County and eastern San Diego County in the south to Inyo County and eastern Kern County in the north, as illustrated in Figure III.1-1 (Plan Area and Ecoregion Subareas). The Plan Area is bounded by Baja California (Mexico) to the south; Arizona and Nevada to the east; the Sierra Nevada and Tehachapi mountain ranges to the north and northwest; and the Peninsular and Transverse mountain ranges to the west.

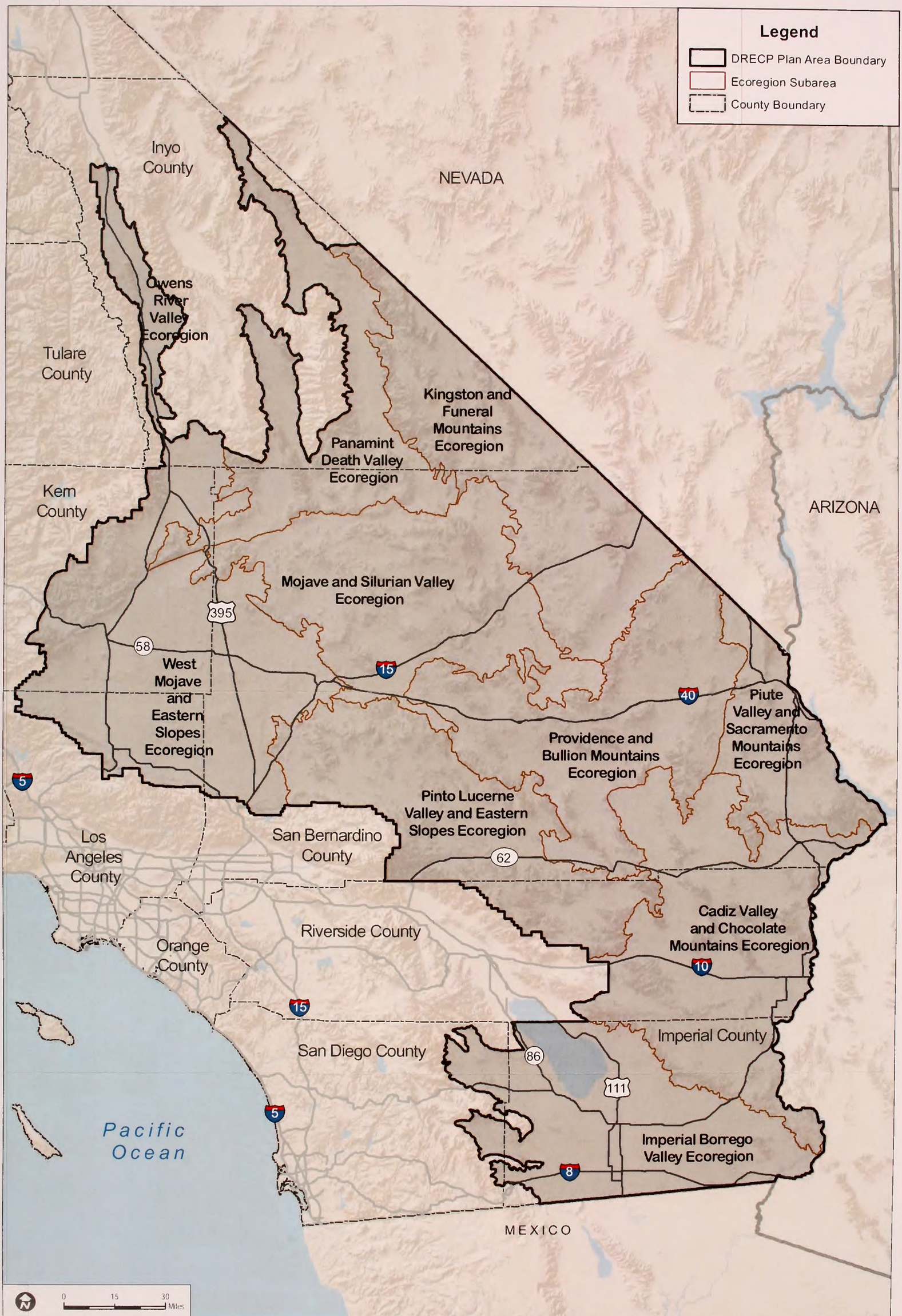
The topography within the Plan Area ranges from 280 feet below mean sea level in the Salton Trough to elevations of 8,500 to 8,700 feet above mean sea level in the southern Sierra Nevada area. The majority of the Plan Area is at the middle elevation range of approximately 1,500 to 3,500 feet above mean sea level. A large portion of the Plan Area is relatively flat, with the flattest areas in the Mojave Desert's high desert plains and hills and in the Colorado/Sonoran Desert.

The Plan Area extends across the Mojave and Colorado/Sonoran deserts and a small portion of the Great Basin Desert. The geomorphology (landforms and relief patterns of the earth's surface) of the desert region is dominated by short, isolated mountain ranges within desert plains. Major landforms include mountains, plateaus, alluvial fans, playas, basins, and dunes. See Chapter III.4, Geology and Soils, for more information regarding landforms in the Plan Area.

In the desert regions of the Plan Area, the climate is generally characterized by hot, dry summers and mild to cold winters. Rainfall originates from winter frontal storms off the Pacific Ocean and occasional summer convective monsoons; these sources are variable, however, in different regions of the desert. Winter storms generally bring widespread, longer duration, low-intensity rainfall, particularly in the western desert regions (Mojave). Summer monsoons generate isolated, short, high-intensity rainfall in the eastern desert regions (Colorado/Sonoran) (Lichvar and McColley 2008). Annual precipitation ranges from approximately 3 inches in the low deserts (Colorado/Sonoran) to approximately 8 inches in the high deserts and desert ranges (Mojave) (U.S. Forest Service 1997).

The Mojave Desert is a "cold" or winter desert, with about 50% to 70% of rainfall occurring during the winter. Rainfall amounts are geographically and seasonally variable and related to topography and elevation. The Colorado/Sonoran Desert is lower in elevation overall and hotter and drier than the Mojave Desert. In contrast with the Mojave Desert, the lower elevations of the Colorado/Sonoran Desert seldom experience subfreezing temperatures and frost. There is winter rain, but a substantial portion of the annual rainfall in the Colorado/Sonoran Desert is from the North American monsoon, which typically occurs from July to late September. Compared with the Mojave Desert, precipitation patterns and temperature regimes across the Colorado/Sonoran Desert are less variable. See Chapter III.3, Meteorology and Climate Change, for more information on climate patterns for the Plan Area.

Major hydrologic features in the Plan Area include the Lower Colorado River, Salton Sea, Owens River, Owens Lake, Mojave River, and Amargosa River. The Plan Area is divided into two major hydrologic regions: the South Lahontan Hydrologic Region and the Colorado River Hydrologic Region. See Chapter III.5, Flood Hazard, Hydrology, and Drainage, for more information about hydrologic features in the Plan Area.



Sources: ESRI (2014); CEC (2013); Desert Renewable Energy Conservation Plan (DRECP 2013)

FIGURE III.1-1

DRECP Plan Area and Ecoregion Subareas

INTENTIONALLY LEFT BLANK

III.1.2 Ecoregion Subareas Within the Plan Area

The Plan Area is divided into ecoregion subareas, and these subareas are further divided into 33 ecoregion subarea subunits. The two categories of areas used in the Baseline and Impact Analysis sections of this document are:

- **Ecoregion Subareas** – These are the 10 broad planning units used consistently in this document. They were defined initially based on the U.S. Forest Service system (U.S. Forest Service 1997), which established ecoregion boundaries, but later modified for DRECP purposes. The names and geographic boundaries of the ecoregion subareas are shown in Figure III.1-1. The ecoregion subareas are:
    - Cadiz Valley and Chocolate Mountains
    - Imperial Borrego Valley
    - Kingston and Funeral Mountains
    - Mojave and Silurian Valley
    - Owens River Valley
    - Panamint Death Valley
    - Pinto Lucerne Valley and Eastern Slopes
    - Piute Valley and Sacramento Mountains
    - Providence and Bullion Mountains
    - West Mojave and Eastern Slopes
- **Subunits of Ecoregion Subareas** – These are units within an ecoregion subarea (e.g., West Mojave 1). These units were created specifically for the DRECP and are used for the more detailed analysis of certain geographic components of alternatives including distribution of generation and analysis of operational effects. Figure III.1-1 also shows the names and geographic boundaries of subunits.

The Environmental Impact Report/Environmental Impact Statement (EIR/EIS) presents analysis within ecoregion subareas and subunits wherever appropriate to describe settings and impacts.

III.1.3 Definition of Environmental Baseline

III.1.3.1 CEQA Environmental Setting

California Environmental Quality Act (CEQA) Guidelines, Section 15125, generally define the baseline as the existing physical conditions at the time the Notice of Preparation (NOP)

is published, at the inception of the environmental review. This environmental setting normally constitutes the baseline physical conditions by which a lead agency determines the significance of an impact.

Courts have recognized instances where calculating the baseline on the NOP date does not capture true pre-project conditions. These rulings reason that, by using the qualifying term "normally," Section 15125 recognizes that, when appropriate, a lead agency does have discretion to select a different baseline method to account for the circumstances presented. (See *Fat v. County of Sacramento* [2002] 97 Cal.App.4th 1270, 1278.)

III.1.3.2 NEPA Affected Environment

The National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations require that environmental impact statements "succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration" (40 Code of Federal Regulations 1502.15). Establishing the baseline is therefore fundamental to the analysis in an EIS.

III.1.3.3 Environmental Baseline Used in This Document

The "affected environment" (NEPA) and "environmental setting" (CEQA) together make up the environmental baseline used to determine the effects of the Plan. The environmental baseline is the same for both NEPA and CEQA.

Due to the complexity of the DRECP EIR/EIS and the Renewable Energy Action Team agencies' desire to share interim documents with the public, the agencies provided, in December 2012, the DRECP documents *Description and Comparative Evaluation of Draft DRECP Alternatives*. These documents included environmental baseline sections for eight resource areas and provided the public the opportunity to comment on the draft alternatives.

The DRECP, a regional plan covering 22,400,000 acres, is extraordinary in its scope and scale. It has taken time and coordinated effort to determine appropriate boundaries, create maps, and acquire and verify survey data for certain species, among hundreds of other details. Multiple agencies, all requiring coordination and review, are involved in this effort.

As noted in Section III.1.3.1, CEQA Environmental Setting, CEQA states that the environmental baseline is normally set on the date when the lead agency publishes its NOP for an EIR; this occurred on July 29, 2011, consistent with CEQA Guidelines. As noted, case law has determined that the lead agency has the discretion to choose a different baseline as long as it is supported by substantial evidence.

In addition to the coordination time required for the DRECP, many renewable energy projects have been built since the NOP date, changing existing conditions. The lead agencies have therefore determined that October 15, 2013, is the appropriate baseline date for this EIR/EIS. The Renewable Energy Action Team agencies chose this date instead of the NOP publication date for the following reasons:

- The October 15, 2013, baseline date is closer to the projected approval date for the DRECP, so the physical setting should be substantially the same as when the project begins.
- The more recent date includes newer existing projects. Of the over 50 renewable energy projects within the Plan Area that are either already operational or under construction, at least half began construction after the NOP publication date. In the interests of timeliness and accuracy, the Renewable Energy Action Team agencies wanted to include those projects and their significant impacts in the baseline.
- The biological resources mapping effort was largely complete by October 15, 2013, so at that point there was enough data for a meaningful environmental review. Additionally, the October date should not affect analysis for most of the other resources evaluated in the EIR/EIS. Some technical areas, such as soils and geology, do not change quickly; and the data do not typically change from year to year. The choice of the revised date reflects both adequate data available in those areas and the robust data available in more sensitive areas.
- For all the reasons defined here, the revised October 15, 2013, date offers the most accurate assessment of the environmental baseline.

The environmental baseline includes renewable projects expected to be completed by the baseline date. The effects of renewable projects that were approved but not yet constructed by that date are analyzed in Volume IV, Chapter IV.25, Cumulative Impacts Analysis. Projects that were under construction but not completed before the baseline date have been evaluated on a case-by-case basis and are included in the baseline if the majority of the project's environmental impacts (e.g., ground disturbance) were expected to occur by the baseline date.

The baseline includes more than 50 renewable energy projects within the Plan Area, listed in Appendix O (Existing Renewable Energy Projects). The DRECP would allow permitting of up to 20,000 megawatts of renewable energy projects, in addition to these existing projects. Figures III.1-2a and III.1-2b show the locations of these projects, and Table III.1-1 summarizes their acreage and generation capacity.

Table III.1-1
Summary of Existing Renewable Energy (RE) Projects in the Plan Area as of October 15, 2013

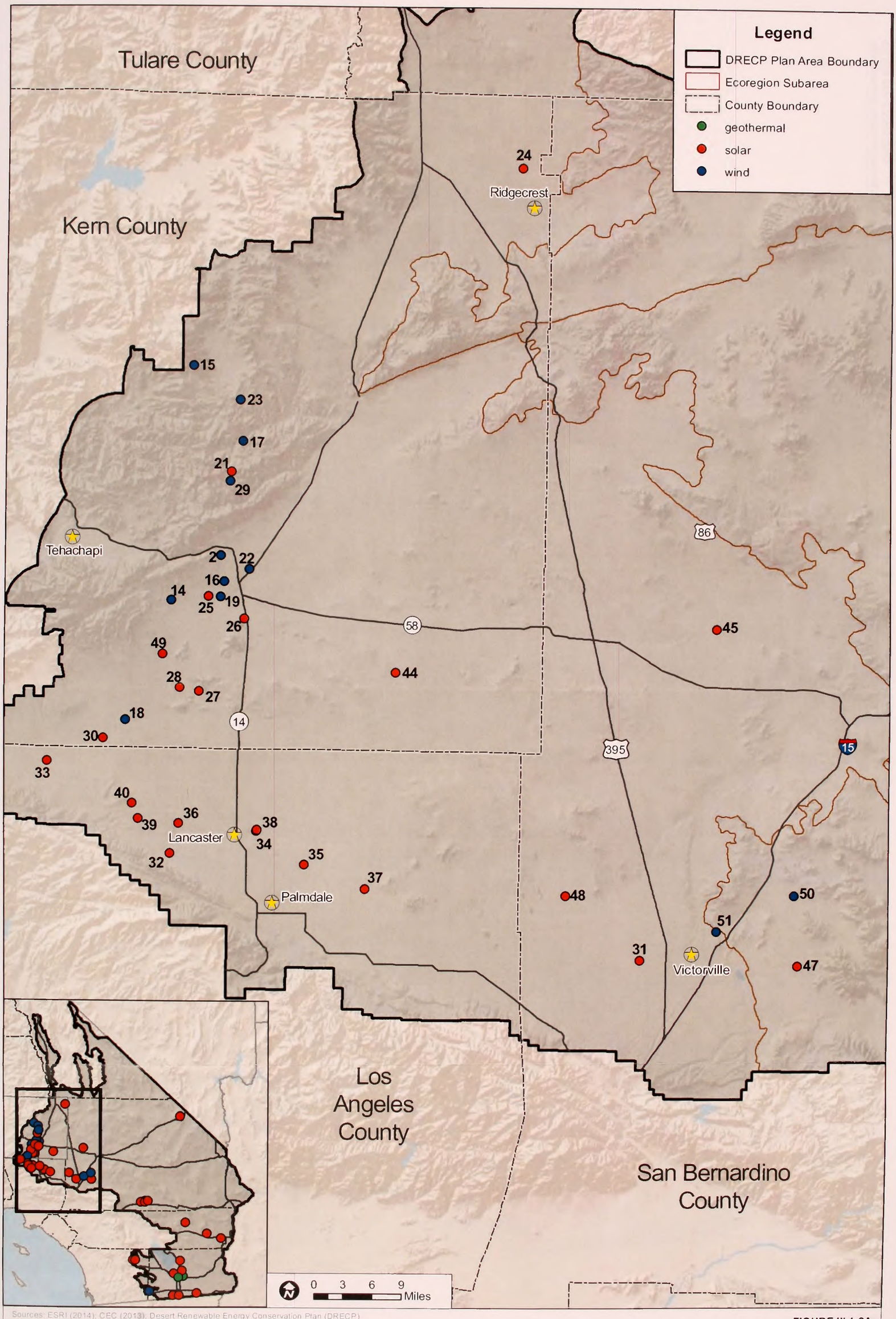
	Generation Capacity		Acreage			
	Total MW	*% of Total MW*	*% of Total Acres*	*Total Acres of RE Projects in Plan Area*	*Total Acres of RE Projects in DFAs**	*% of Total RE Project Acreage in DFAs**
BLM-administered public lands: total	*1,805*	*29%*	*28%*	*24,593*	*8,686*	*35%*
Wind	615	34%	61%	15,028	2,592	11%
Solar	1,190	66%	39%	9,565	6,094	25%
Private lands and other public lands: total	*4,445*	*71%*	*72%*	*64,453*	*41,641*	*65%*
Wind	2,015	45%	69%	44,643	23,222	36%
Solar	2,330	55%	31%	19,810	18,419	29%
Geothermal	100					
TOTAL renewable energy projects	**6,250**	**100%**	**100%**	**89,046**	**50,327**	**57%**

Note: This data is summarized from the table in Appendix O.

* The Development Focus Area (DFA) locations for the Preferred Alternative are used to illustrate the concentrated areas of renewable energy projects in this exercise. While the sizes and locations of DFAs vary among alternatives, this data provides the locations of existing renewable energy in comparison with the proposed DFAs. The Preferred Alternative contains 2,027,693 acres of DFAs.

Planning Decisions. The baseline includes specifically allowable land uses and any use restrictions in decisions or plans. For example, BLM land use plan decisions are effective immediately when approved, so the environmental baseline would include the effect of the BLM's land use planning decision on grazing, recreation, or realty (i.e., uses of the land). However, the actual physical effects of construction of a project would not be included if they occurred after the baseline date. Those impacts are considered reasonably foreseeable and thus included in the analysis of cumulative effects rather than in the baseline.

Baseline Data. Rounding of data was applied to raw values to avoid false precision when presenting calculated values. However, in presenting rounded values there were tradeoffs. Numerical data presented and analyzed in this volume comes from a variety of different sources with varying levels of precision in the data. For presentation purposes, the following general rounding rules were applied: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10. Each value, including the totals and sub-totals, was independently rounded directly from the underlying source data.

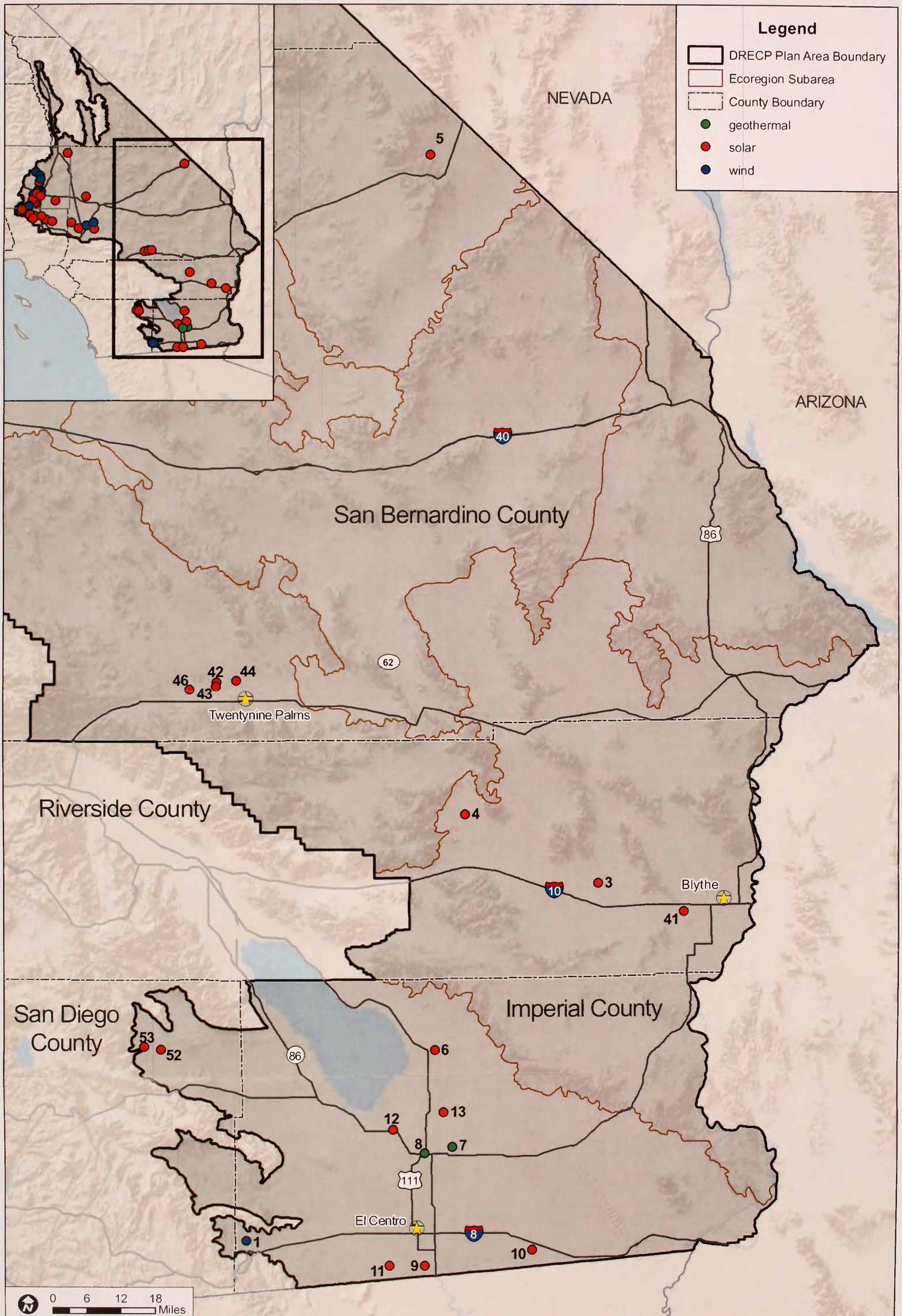


Sources: ESRI (2014); CEC (2013); Desert Renewable Energy Conservation Plan (DRECP)

FIGURE III.1-2A

Existing Renewable Energy Projects in DRECP Plan Area (Western Portion)

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); Desert Renewable Energy Conservation Plan (DRECP)

FIGURE III.1-2B

Existing Renewable Energy Projects in DRECP Plan Area (Eastern Portion)

INTENTIONALLY LEFT BLANK

However, because totals and sub-totals were independently rounded they may not be the sum of the other constituent lower level table values.

III.1.4 Baseline Outside the Plan Area

The Plan would have effects outside of the Plan Area for two reasons. First, required transmission facilities would be constructed or upgraded between the renewable generation facility locations and the areas in California with the highest electricity demand—specifically the San Diego and Los Angeles areas and Pacific Gas and Electric Company's Northern California service territory. Second, the BLM Land Use Plan Amendment (LUPA) would implement planning changes outside the Plan Area (e.g., changes in approach to visual resource management). Because the LUPA changes extend outside the Plan boundaries, this EIR/EIS and LUPA addresses the potential effects outside of the Plan Area. Resource discussions in each chapter within Volumes III and IV include specific discussion of the resources and effects outside of the Plan Area.

III.1.5 Organization of the Environmental Baseline Chapters

The organization of the sections within Volume III differs among chapters since the resources are distributed differently across the Plan Area. Each chapter within Volume III includes high-level sections on the following topics:

Regulatory Setting. Each resource chapter has a section describing the existing laws, orders, regulations, and standards that are relevant to conservation or development within the Plan Area.

Overview of Resources Within the Plan Area. This section describes the existing conditions for each resource within the Plan Area. Most resources are described by ecoregion subarea, but that division is not appropriate for all chapters.

Specifics on Resources Within the Plan Area. Each chapter has a section describing, on a programmatic level, the affected environment for that resource.

Some chapters within this volume include discussion of resources for the following agency-specific decisions:

- BLM LUPA Affected Environment
- Natural Community Conservation Plan Affected Environment.
- General Conservation Plan Affected Environment.

Resources Outside of the Plan Area

- Transmission Outside of Plan Area
- BLM LUPA Decisions Outside of Plan Area

III.2 AIR QUALITY

Motor vehicles are a leading global source of air pollution and greenhouse gases (GHG). Other mobile sources of air pollution include construction equipment, trains, and airplanes. Federal and state agencies such as the federal Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) establish emission standards for mobile sources. Stationary sources, such as gasoline stations, power plants, dry cleaners, and other commercial and industrial facilities, also contribute to air pollution. Local air pollution control or management districts regulate stationary sources of air pollution, and the California Energy Commission (CEC) has the statutory responsibility for licensing thermal power plants 50 megawatts and larger and related facilities such as transmission lines, fuel supply lines, and water pipelines.

To manage the state's air resources on a regional basis, California is divided geographically into 15 air basins and 35 local air districts. The Plan Area encompasses parts of four air basins. Areas within each air basin share the same air masses and are expected to have similar ambient air quality throughout. However, the transport of pollutants between adjacent air basins does occur from time to time. If an air basin is not in either federal or state attainment for a particular pollutant standard, the basin is classified as a marginal, moderate, serious, severe, or extreme nonattainment area.

The following regulatory framework identifies the federal and state agencies in charge of monitoring and controlling mobile and stationary source air pollutants and describes measures being taken to achieve and maintain healthful air quality in the Plan Area.

Appendix R1.2 provides supporting information for this chapter, specifically a table and chart that identify the baseline air pollutant emissions reported for existing renewable energy projects during their construction in the Plan Area.

III.2.1 Regulatory Setting

III.2.1.1 Federal

III.2.1.1.1 Criteria Pollutant Standards

Ambient air quality standards represent the maximum levels of background pollution considered safe, with an adequate margin of safety, to protect the public health and welfare. The federal Clean Air Act, enacted in 1970 and amended in 1977 and 1990 (42 United States Code [U.S.C.] 7401 et seq.), protects and enhances the quality of the nation's air resources to benefit public health, welfare, and productivity. In 1971, in order to achieve the mandates of Section 109 of the Clean Air Act (42 U.S.C. 7409), the EPA developed primary and secondary national ambient air quality standards (NAAQS).

EPA has designated seven pollutants of primary concern: ozone, carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), lead, and coarse and fine inhalable particulates (PM10 and PM2.5, respectively). PM10 is particulate matter with an aerodynamic diameter of 10 microns or less, and PM2.5 is particulate matter with an aerodynamic diameter of 2.5 microns or less. The primary NAAQS "in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health" and the secondary standards "protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air" (42 U.S.C. 7409[b] [2]). The primary standards were established, with a margin of safety, considering long-term exposure for the most sensitive groups in the general population (children, senior citizens, and people with breathing difficulties).

Ozone is a primary air pollutant concern in California. In 1997 the EPA promulgated a new 8-hour ozone standard of 8 parts per hundred million (pphm) to replace the existing 1-hour standard of 12 pphm. Subsequent litigation delayed implementation of the rule. Designations under the new standards were made in June 2004. Per the EPA's final Phase 1 rule for implementing the 8-hour ozone standard, the 1-hour ozone standard was to be revoked "in full, including the associated designations and classifications, one year following the effective date of the designations for the 8-hour NAAQS [for ozone]" (Vol. 69 of the Federal Register [FR] p. 23951). The final rule describes the requirements for transitioning from the 1-hour to 8-hour ozone standard.

Because of subsequent litigation concerning the Phase 1 implementation rule, the provisions of the 8-hour ozone standard Phase 1 implementation rule that placed 8-hour ozone nonattainment areas under Subpart 1, Part D, Title I of the Clean Air Act, instead of Subpart 2, were vacated. New designations were proposed for areas that had been classified under Subpart 1 (74 FR 2936) on January 16, 2009. On May 14, 2012, the former Subpart 1 nonattainment areas were classified under Subpart 2 (77 FR 28424), effective June 13, 2012.

The Great Basin Valleys Air Basin is classified attainment for the 1997 and 2008 8-hour ozone standards. Los Angeles and San Bernardino counties within the western portion of the Mojave Desert Air Basin are classified as severe-15 nonattainment for the 1997 and 2008 8-hour ozone standards (meaning it is projected to take 15 years to achieve attainment). Within the Salton Sea Air Basin, portions of Riverside County are classified severe-15 nonattainment for the 1997 and 2008 8-hour ozone standards, and Imperial County is classified as moderate nonattainment for the 1997 8-hour ozone standard and marginal nonattainment for the 2008 standard. The San Diego Air Basin is classified as in attainment of the 1997 8-hour ozone standard and in marginal nonattainment of the 2008 standard.

Under Subpart 2, consistent with Section 182 of the Clean Air Act, the maximum period of attainment from the effective date of designation for areas designated as nonattainment is shown in Table III.2-1 (69 FR 23951).

Table III.2-1
Attainment Periods

Nonattainment Designation	Period (years)
Marginal	3
Moderate	6
Serious	9
Severe	15 or 17
Extreme	20

On April 30, 2012, the EPA provided final designations for the 2008 8-hour ozone standard of 0.075 ppm (annual fourth-highest daily maximum 8-hour average concentration, averaged over 3 years). Except for the Great Basin Valleys Air Basin and eastern portions of the Mojave Desert Air Basin, much of the Plan Area was designated nonattainment for the 2008 8-hour ozone standards.

On September 21, 2006, the EPA revised the NAAQS for particulate matter. The 24-hour $PM_{2.5}$ standard was strengthened from 65 micrograms per cubic meter ($\mu g/m^3$) to 35 $\mu g/m^3$. The existing standard for annual $PM_{2.5}$ of 15 $\mu g/m^3$ remained the same. The EPA also revised the standard for PM_{10}. Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the agency revoked the annual PM_{10} standard effective December 18, 2006. NAAQS standards were further revised in 2012. On December 14, 2012, the EPA reduced the primary annual $PM_{2.5}$ standard from 15 $\mu g/m^3$ to 12 $\mu g/m^3$. All other PM_{10} and $PM_{2.5}$ 24-hour and secondary annual standards were retained.

On June 2, 2010, the EPA established a new 1-hour SO_2 standard at a level of 75 parts per billion (ppb), effective August 23, 2010. The revised standard is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The EPA also revoked both the existing 24-hour SO_2 standard of 0.14 ppm and the annual primary SO_2 standard of 0.030 ppm, effective August 23, 2010. On March 20, 2012, the EPA took final action to retain the existing secondary SO_2 standard of 0.5 ppm averaged over 3 hours, not to be exceeded more than once per year (77 FR 20218). The final rule for the secondary standard is effective June 4, 2012.

On February 9, 2010, the EPA finalized the new 1-hour NO_2 standard to 100 parts per billion (ppb) based on the 3-year average of the 98th percentile of the annual distribution

of daily maximum 1-hour average concentrations (75 FR 6474). The annual NO_2 standard of 53 ppb remains unchanged. The EPA completed final designations for the new standards on January 20, 2012. The EPA determined that no area of the country, including the Plan Area, is violating the 2010 national standard for NO_2. All areas have therefore been designated as "unclassifiable/attainment." To determine compliance with the standard, the new NO_2 rule also establishes new ambient air monitoring network and reporting requirements. Once the expanded network of NO_2 monitors is fully deployed and three years of air quality data have been collected, the EPA intends to redesignate areas in 2016 or 2017, as appropriate, based on the air quality data from the new monitoring network.

The secondary standards for NO_2 also underwent separate review. On March 20, 2012, the EPA took final action to retain the existing secondary NO_2 standard of 0.053 ppm averaged over a year (77 FR 20218). The final rule for the secondary standard took effect June 4, 2012.

In 2008, the EPA revised the primary standard for lead from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$ averaged over a rolling 3-month period evaluated over a 3-year period, and revised the secondary standard to be identical to the primary standard (73 FR 66964). On November 22, 2011, the EPA finalized designations for the 2008 lead standard. Although limited portions of Los Angeles County were designated as nonattainment, all other areas within the state of California were designated as unclassifiable/attainment (76 FR 72097). The 1978 lead NAAQS will be retained until one year after designations for the new standards, except in current nonattainment areas.

The Clean Air Act requires EPA to review the standards every five years. On August 31, 2011, the EPA finalized review of the carbon monoxide (CO) standards and concluded that the existing primary standards of 35 ppm averaged over a 1-hour period and 9 ppm averaged over an 8-hour period would be retained (76 FR 54294). The EPA also concluded that no secondary standard should be set for CO at this time. All areas of California are either unclassifiable or in attainment (maintenance) for CO standards.

The current NAAQS are presented in Table III.2-2.

Table III.2-2
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	*Method*[4]	*Primary*[3,5]	*Secondary*[3,6]	*Method*[7]
Ozone	1 Hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.07 ppm (137 $\mu g/m^3$)		0.075 ppm (147 $\mu g/m^3$)		

Table III.2-2
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	*Method*[4]	*Primary*[3,5]	*Secondary*[3,6]	*Method*[7]
Respirable Particulate Matter (PM10)[8]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[8]	24 Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12 µg/m^3		
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Nondispersive Infrared Photometry	35 ppm (40 mg/m^3)	—	Nondispersive Infrared Photometry
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[9]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemi-luminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemi-luminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		53 ppb (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[10]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Fluorescence; Spectro-photometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[10]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[10]	—	
Lead[11,12]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		

Table III.2-2
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	*Method*[4]	*Primary*[3,5]	*Secondary*[3,6]	*Method*[7]
Visibility Reducing Particles[13]	8 Hour	See footnote[13]	Beta Attenuation and Transmittance through Filter Tape	No Federal Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chroma-tography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[11]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chroma-tography			

Source: CARB 2013.

ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; – = not applicable.

1 California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles) are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98% of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr (torr is a unit of pressure equal to 1/760 atmosphere). Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Any equivalent measurement method that can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7 Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8 On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

9 To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[10] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[11] The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[12] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[13] In 1989, the CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

III.2.1.1.2 Federal General Conformity Rule

Federal actions that cause emissions in a federal nonattainment area are subject to the General Conformity Rule under Section 176 of the Clean Air Act (40 Code of Federal Regulations [CFR] 93, Subpart B). Federal conformity requires each action to demonstrate that the emissions caused or initiated by the federal action do not disrupt progress toward achieving attainment. For actions that exceed applicability thresholds, the federal agency must make a formal conformity determination for the affected federal nonattainment area.

III.2.1.1.3 Class I Lands

The Clean Air Act Amendments of 1977 established Class I, II, and III areas where emissions of particulate matter and SO_2 are to be restricted. The restrictions are most severe in federal Class I areas and are progressively more lenient in Class II and III areas. Mandatory Class I federal lands include:

- International parks.
- National wilderness areas that exceed 5,000 acres in size.
- National memorial parks that exceed 5,000 acres in size.
- National parks that exceed 6,000 acres in size.

Figure III.2-1 shows the federal Class I lands in the vicinity of the Plan Area and identifies 68 areas within the Plan Area considered eligible for treatment as Class I lands administered by the Bureau of Land Management (BLM), the National Park Service (NPS), or the U.S. Fish and Wildlife Service (USFWS). Table III.2-3 shows the breakdown of these

areas by Desert Renewable Energy Conservation Plan (DRECP or Plan) ecoregion subarea. There are also a number of other Class I lands in the vicinity of the Plan Area.

Table III.2-3
Class I Areas by Ecoregion Subarea

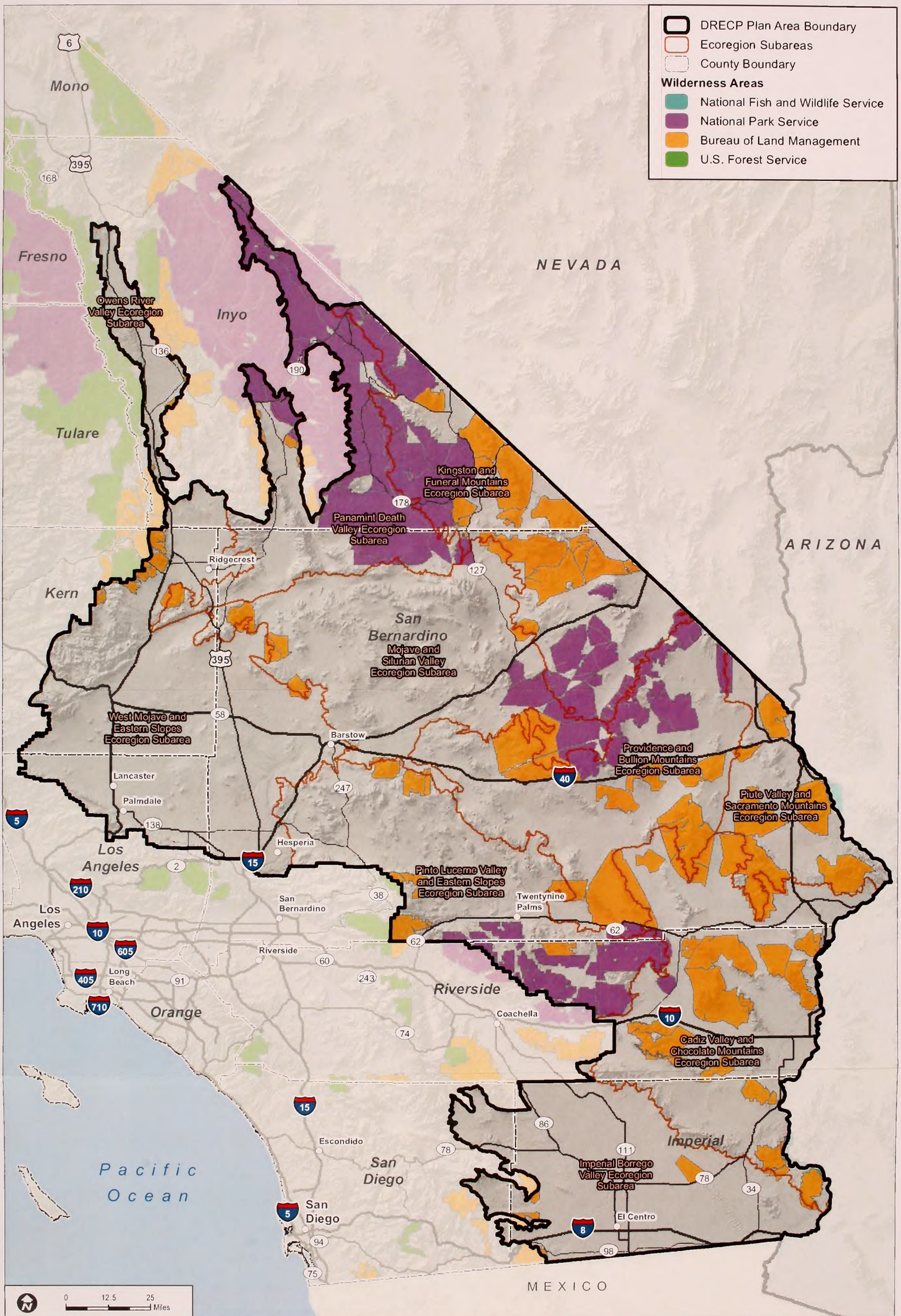
Ecoregion Subarea	Class I Areas	Agency
Cadiz Valley and Chocolate Mountains	Big Maria Mountains Wilderness	BLM
	Cadiz Dunes Wilderness	BLM
	Chuckwalla Mountains Wilderness	BLM
	Indian Pass Wilderness	BLM
	Little Chuckwalla Mountains Wilderness	BLM
	Little Picacho Wilderness	BLM
	Old Woman Mountains Wilderness	BLM
	Palen/McCoy Wilderness	BLM
	Palo Verde Mountains Wilderness	BLM
	Picacho Peak Wilderness	BLM
	Rice Valley Wilderness	BLM
	Riverside Mountains Wilderness	BLM
	Sheephole Valley Wilderness	BLM
	Stepladder Mountains Wilderness	BLM
	Turtle Mountains Wilderness	BLM
	Whipple Mountains Wilderness	BLM
	Imperial Refuge Wilderness	USFWS
	Joshua Tree National Park	NPS
Imperial Borrego Valley	Carrizo Gorge Wilderness	BLM
	Coyote Mountains Wilderness	BLM
	Fish Creek Mountains Wilderness	BLM
	Indian Pass Wilderness	BLM
	Jacumba Mountains Wilderness	BLM
	Little Picacho Wilderness	BLM
	North Algodones Dunes Wilderness	BLM
	Orocopia Mountains Wilderness	BLM
	Picacho Peak Wilderness	BLM
Kingston and Funeral Mountains	Funeral Mountains Wilderness	BLM
	Hollow Hills Wilderness	BLM
	Ibex Wilderness	BLM
	Kingston Range Wilderness	BLM
	Mesquite Wilderness	BLM

Table III.2-3
Class I Areas by Ecoregion Subarea

Ecoregion Subarea	Class I Areas	Agency
	Nopah Range Wilderness	BLM
	North Mesquite Mountains Wilderness	BLM
	Pahrump Valley Wilderness	BLM
	Resting Spring Range Wilderness	BLM
	Saddle Peak Hills Wilderness	BLM
	South Nopah Range Wilderness	BLM
	Stateline Wilderness	BLM
	Death Valley National Park	NPS
	Mojave National Park	NPS
Mojave and Silurian Valley	Black Mountain Wilderness	BLM
	Bristol Mountains Wilderness	BLM
	Golden Valley Wilderness	BLM
	Grass Valley Wilderness	BLM
	Hollow Hills Wilderness	BLM
	Kelso Dunes Wilderness	BLM
	Kingston Range Wilderness	BLM
	Newberry Mountains Wilderness	BLM
	Rodman Mountains Wilderness	BLM
	Death Valley National Park	NPS
	Mojave National Park	NPS
Owens River Valley	Coso Range Wilderness	BLM
	Inyo Mountains Wilderness	BLM
	Malpais Mesa Wilderness	BLM
	Sacatar Trail Wilderness	BLM
	Golden Trout Wilderness	USFS
	John Muir Wilderness	USFS
Panamint Death Valley	Argus Range Wilderness	BLM
	El Paso Mountains Wilderness	BLM
	Golden Valley Wilderness	BLM
	Manly Peak Wilderness	BLM
	Surprise Canyon Wilderness	BLM
	Death Valley National Park	NPS
Pinto Lucerne Valley and Eastern Slopes	Bighorn Mountain Wilderness	BLM
	Cleghorn Lakes Wilderness	BLM
	Newberry Mountains Wilderness	BLM
	Pinto Mountains Wilderness	BLM

Table III.2-3
Class I Areas by Ecoregion Subarea

Ecoregion Subarea	Class I Areas	Agency
	Rodman Mountains Wilderness	BLM
	San Gorgonio Wilderness	BLM
	Joshua Tree National Park	NPS
	Bighorn Mountain Wilderness	USFS
	San Gorgonio Wilderness	USFS
Piute Valley and Sacramento Mountains	Bigelow Cholla Garden Wilderness	BLM
	Chemehuevi Mountains Wilderness	BLM
	Dead Mountains Wilderness	BLM
	Stepladder Mountains Wilderness	BLM
	Turtle Mountains Wilderness	BLM
	Whipple Mountains Wilderness	BLM
	Havasu Wilderness	USFWS
	Mojave National Park	NPS
Providence and Bullion Mountains	Bigelow Cholla Garden Wilderness	BLM
	Bristol Mountains Wilderness	BLM
	Cleghorn Lakes Wilderness	BLM
	Clipper Mountain Wilderness	BLM
	Kelso Dunes Wilderness	BLM
	Old Woman Mountains Wilderness	BLM
	Piute Mountains Wilderness	BLM
	Sheephole Valley Wilderness	BLM
	Trilobite Wilderness	BLM
	Joshua Tree National Park	NPS
	Mojave National Park	NPS
West Mojave and Eastern Slopes	Black Mountain Wilderness	BLM
	Bright Star Wilderness	BLM
	El Paso Mountains Wilderness	BLM
	Golden Valley Wilderness	BLM
	Grass Valley Wilderness	BLM
	Kiavah Wilderness	BLM
	Owens Peak Wilderness	BLM
	Kiavah Wilderness	USFS



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013)

FIGURE III.2-1

Federal Class I Areas

Draft DRECP and EIR/EIS

August 2014

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.2-Air\figIII.2-1.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

III.2.1.2 State

The EPA allows states the option to develop stricter air quality standards. The State of California generally has set more stringent limits on the seven criteria pollutants (see Table III.2-2). The State of California has also set standards for other pollutants including visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. The California Clean Air Act, also known as the Sher Bill or Assembly Bill (AB) 2595, became law on September 30, 1988, and took effect on January 1, 1989. The California Clean Air Act requires that air quality management districts (AQMDs) and air pollution control districts (APCDs) implement regulations to reduce emissions from mobile sources through the adoption and enforcement of transportation control measures, and further reduce stationary source emissions through ongoing rulemaking. The California Clean Air Act requires that a district must (South Coast AQMD 2007):

- Demonstrate the overall effectiveness of the air quality program.
- Reduce nonattainment pollutants or their precursors at a rate of 5% per year, or include all feasible measures and expeditious adoption schedules.
- Reduce population exposure to severe nonattainment pollutants according to a prescribed schedule.
- Rank control measures by cost effectiveness.

The CARB Portable Equipment Registration Program allows owners or operators of portable engines and associated equipment commonly used for construction or farming to register their units under a statewide portable program that allows them to operate their equipment throughout California without having to obtain individual permits from local air districts.

III.2.1.3 Toxic Air Contaminants

The public's exposure to toxic air contaminants (TACs) is a significant public health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health (AB 1807 Health and Safety Code Sections 39650–39674). The Legislature established a two-step process to address the potential health effects from TACs. The first step is the risk assessment (or identification) phase. The second step is the risk management (or control) phase of the process.

The California Air Toxics Program establishes the process for the identification and control of toxic air contaminants, including provisions to make the public aware of significant toxic exposures and for reducing risk. The Air Toxics "Hot Spots" Information and Assessment

Act (AB 2588 Connelly), also enacted in 1987, requires stationary sources to report the types and quantities of certain substances routinely released into the air. The goals of the Air Toxics "Hot Spots" Act are to collect emission data, identify facilities with localized impacts, determine health risks, notify nearby residents of significant risks, and reduce those significant risks to acceptable levels.

The Children's Environmental Health Protection Act, SB 25 (Chapter 731 Escutia, Statutes of 1999), focuses on children's exposure to air pollutants. The act requires CARB to review its air quality standards from a children's health perspective, evaluate the statewide air-monitoring network, and develop any additional air toxics control measures needed to protect children's health. At the local level, toxic air pollutants are generally regulated through the local air district's rules and regulations.

Diesel-exhaust particulate matter emissions have been established as TACs. Diesel emissions generated within California pose a potential hazard to residents and visitors. Following the identification of diesel particulate matter as an air toxic in 1998, CARB has worked on developing strategies and regulations aimed at reducing the risk from diesel particulate matter. The overall strategy for achieving these reductions is found in the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (CARB 2000). A statewide goal of CARB's plan is to reduce the cancer risk arising from exposure to diesel particulate matter by 75% by 2010 and 85% by 2020.

A number of programs and strategies to reduce diesel particulate matter that have been either implemented or are in the process of being developed (CARB 2011a and 2011b) include:

1. **The Carl Moyer Memorial Air Quality Standards Attainment Program:** This CARB-administered program, initially approved in February 1999, provides incentive grants to cover an incremental portion of the cost of upgrading to cleaner-than-required engines, equipment, and other sources of pollution, providing early or extra emission reductions. Eligible projects include cleaner on-road, off-road, marine, locomotive, lawn and garden, light duty passenger vehicles (being scrapped), and agricultural equipment. The program guidelines are revised regularly, most recently in April 2011.
2. **On-Road Heavy-Duty Diesel Engine Reduced Emission Standards**: This rule reduces emission standards for 2007 and subsequent model year heavy-duty diesel engines (66 FR 5002, January 18, 2001).
3. **On-Road Heavy-Duty Diesel Engine In-Use Compliance Program**: This program requires in-use compliance testing beginning with 2005 model year engines to ensure that existing vehicles and engines meet applicable emission standards throughout their useful lives.

Other programs include:

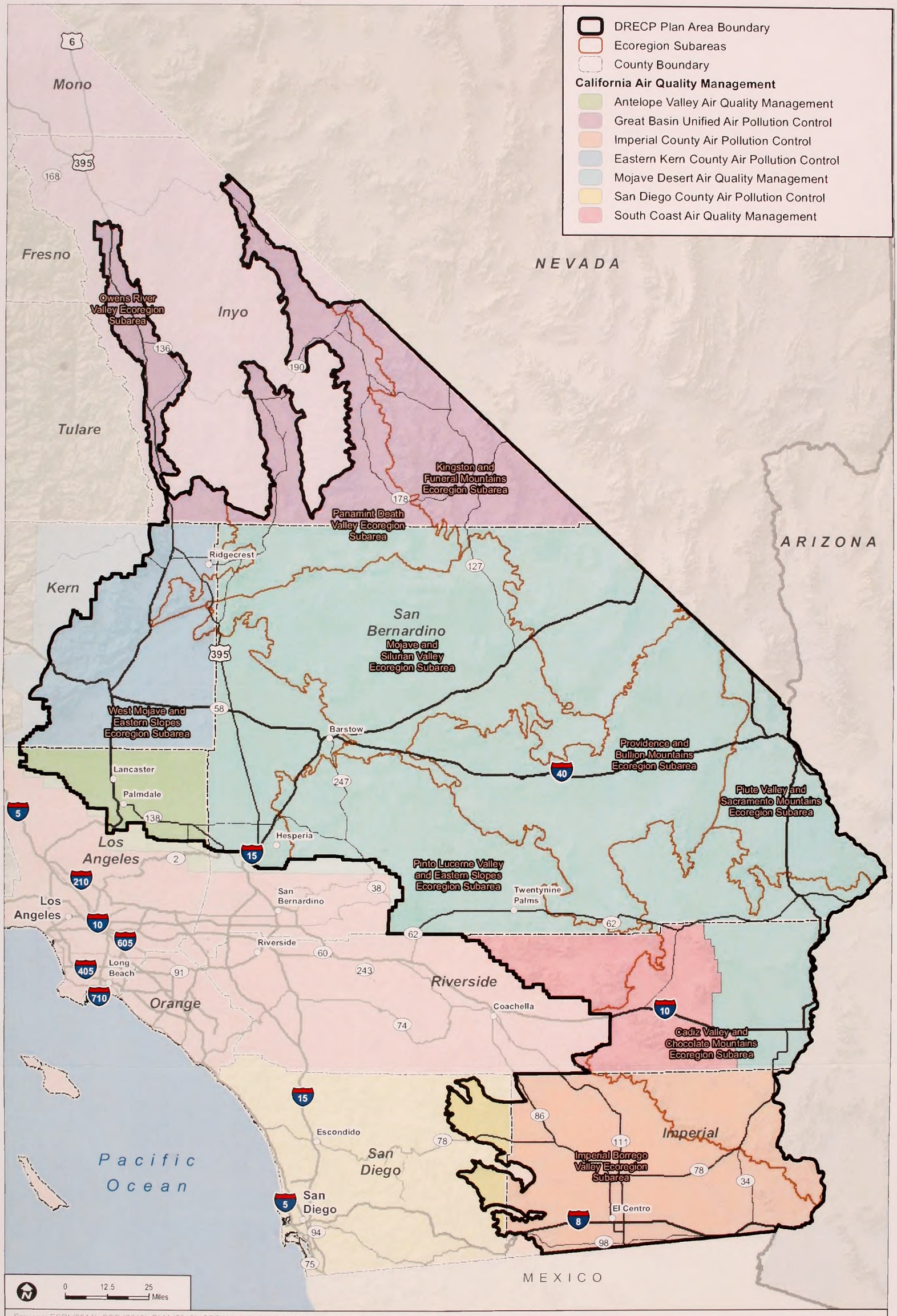
1. **Off-Road Mobile Sources Emission Reduction Program:** The goal of this program is to develop regulations to control emissions from diesel, gasoline, and alternative-fueled off-road mobile engines. These sources include a range of equipment, from lawn mowers to construction equipment to locomotives.
2. **Heavy-Duty Vehicle Inspection and Periodic Smoke Inspection Programs:** The Heavy-Duty Vehicle Inspection and Periodic Smoke Inspection Programs were established to control excessive smoke emissions and tampering from heavy-duty diesel trucks and buses.
    a. **Heavy-Duty Vehicle Inspection Program:** The Heavy-Duty Vehicle Inspection Program was adopted into law in 1988 (SB 1997), with the regulations (13 California Code of Regulations [CCR] 2180-2189) governing this program, last amended in 2013. The program requires heavy-duty trucks and buses to be inspected for excessive smoke and tampering, and engine certification label compliance. Any heavy-duty vehicle traveling in California, including vehicles registered in other states and foreign countries, may be tested. Tests are performed by CARB inspection teams at border crossings, California Highway Patrol weigh stations, fleet facilities, and randomly selected roadside locations.
    b. **Periodic Smoke Inspection Program:** The Periodic Smoke Inspection Program was adopted into law in 1990 (SB 2330), with the regulations (13 CCR 2190–2194) governing this program last amended in 2013. The program requires that diesel and bus fleet owners conduct annual smoke opacity inspections of their vehicles and repair those with excessive smoke emissions to ensure compliance.
3. **Lower-Emission School Bus Program:** Under this program, and in coordination with the California Energy Commission and local air districts, CARB developed guidelines that provide criteria for purchasing new school buses and retrofitting existing school buses to reduce particulate matter emissions. In addition, Proposition 1B, approved by voters on November 7, 2006, enacts the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006. This bond act authorizes $200 million for replacing and retrofitting school buses.
4. **School Bus Idling Airborne Toxic Control Measure**: Effective July 2003, CARB approved the Airborne Toxic Control Measure, which limits school bus idling and idling at or near schools. Idling is allowed only when necessary for either safety or operational concerns. The Airborne Toxic Control Measure to limit idling is intended to reduce diesel exhaust particulate matter and other TACs and air pollutants from heavy-duty motor vehicle exhaust.

As an ongoing process, ARB will continue to establish new programs and regulations for the control of diesel particulate emissions, as appropriate. The continued development and implementation of these programs and policies will ensure that public exposure to diesel particulate matter will continue to decline.

III.2.1.4 State Implementation Plan

The State Implementation Plan (SIP) is a collection of documents that set forth the state's strategies for achieving federal air quality standards. Within the SIP, areas may have an air quality attainment plan or a maintenance plan if necessary to ensure against potential deterioration into nonattainment. In California, individual AQMDs and APCDs are responsible for preparing and implementing the portions of SIP that apply to their respective jurisdictions. The Plan Area boundaries encompass areas under the jurisdiction of the following air districts (Figure III.2-2):

- Antelope Valley AQMD
- Great Basin Unified APCD
- Imperial County APCD
- Eastern Kern County APCD
- Mojave Desert AQMD
- San Diego County APCD
- South Coast AQMD



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CARB (2004)

FIGURE III.2-2

Air District Boundaries

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.2-Air\figIII.2-2.mxd 8/19/2014

IINTENTIONALLY LEFT BLANK

These districts adopt rules, regulations, and programs to attain federal and state air quality standards and appropriate the money necessary (including permit fees) to achieve those objectives.

III.2.1.5 California Environmental Quality Act

Section 15125(d) of the California Environmental Quality Act (CEQA) Guidelines requires discussion of any inconsistencies between the project and applicable general and regional plans, including applicable air quality attainment, maintenance plan, or SIP.

III.2.1.6 Local

The local APCD or AQMD regulates air quality at the local level. Each of these agencies prepares the portion of the SIP that is pertinent to its jurisdiction and develops rules and regulations for managing local air resources. Each of the district's rules and regulations appears on the CARB website at http://www.arb.ca.gov/drdb/drdbltxt.htm. Any proposed development in the Plan Area would require compliance with appropriate rules and regulations and the approval of relevant permits. In addition to these rules and regulations, various districts have developed guidance to aid in the evaluation of potential impacts from renewable energy development projects. This guidance is explained below, by agency. The local air districts also generally administer the New Source Review and Operating Permits programs under the oversight of CARB and the EPA.

III.2.1.6.1 Antelope Valley Air Quality Management District

The Antelope Valley AQMD is responsible for a portion of the Mojave Desert Air Basin (see Figures III.2-2 and III.2-3). The Antelope Valley AQMD has developed CEQA and Federal Conformity Guidelines (2011).

III.2.1.6.2 Eastern Kern County Air Pollution Control District

The Eastern Kern County APCD is responsible for a portion of the Mojave Desert Air Basin (see Figures III.2-2 and III.2-3). The Eastern Kern County APCD has developed CEQA Guidelines (1999) and the CEQA Greenhouse Gas Policy (2012).

III.2.1.6.3 Great Basin Unified Air Pollution Control District

The Great Basin Unified APCD is responsible for the Great Basin Valleys Air Basin (see Figures III.2-2 and III.2-3). The district has developed a number of air quality plans including the 2010 Coso Junction PM10 Maintenance Plan (2010), the Air Quality Management Plan for the Town of Mammoth Lakes (1990), the Final Mono Basin Planning Area PM10 SIP (1995), and the Owens Lake PM10 SIP (2008).

III.2.1.6.4 Imperial County Air Pollution Control District

The Imperial County APCD is responsible for a portion of the Salton Sea Air Basin (see Figures III.2-2 and III.2-3). The Imperial County APCD has developed a CEQA Air Quality Handbook (2007), the Final 2009 1997 8-Hour Ozone Modified Air Quality Management Plan (2010a), the Final 2009 Reasonably Available Control Technology SIP (2010b), and the Final 2009 PM10 SIP (2009).

III.2.1.6.5 Mojave Desert Air Quality Management District

The Mojave Desert AQMD is responsible for a portion of the Mojave Desert Air Basin (see Figures III.2-2 and III.2-3). The Mojave Desert AQMD has developed the CEQA and Federal Conformity Guidelines (2011).

III.2.1.6.6 San Diego County Air Pollution Control District

The San Diego County APCD is responsible for the San Diego Air Basin (see Figures III.2-2 and III.2-3). The San Diego County APCD prepared the 1991/1992 Regional Air Quality Strategy (RAQS) in response to requirements set forth in AB 2595. The draft was adopted with amendments on June 30, 1992 (County of San Diego 1992). Attached, as part of the strategy, are the Transportation Control Measures for the air quality plan prepared by the San Diego Association of Governments (SANDAG) in accordance with AB 2595 and adopted by SANDAG on March 27, 1992, as Resolution Number 92-49 and Addendum. The strategy and measures set forth the steps needed to accomplish attainment of state ambient air quality standards. The required triennial updates of the Regional Air Quality Strategy and corresponding Transportation Control Measures were adopted in 1995, 1998, 2001, 2004, and 2009.

The following plans are also available: the 8-Hour Ozone Attainment Plan for San Diego County (2007), the 1-Hour Ozone Redesignation Request and Maintenance Plan for San Diego County (2002), Measures to Reduce Particulate Matter in San Diego County (2005a), the Wildfire Natural Events Action Plan for San Diego County (2005b), and the Redesignation Request and Maintenance Plan for San Diego County (2012).



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CARB (2004)

FIGURE III.2-3
Air Basins

Draft DRECP and EIR/EIS

August 2014

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.2-Air\figIII.2-3.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

III.2.1.6.7 South Coast Air Quality Management District

Within the Plan Area, the South Coast AQMD is responsible for portions of the Mojave Desert and Salton Sea Air Basins (see Figures III.2-2 and III.2-3). Outside of the Plan Area, the South Coast AQMD is also responsible for the air resources in urbanized areas of the South Coast Air Basin. The South Coast Air Basin has or has had some of the worst air quality in the nation. The South Coast AQMD implements and periodically updates the comprehensive plans with strategies for improving air quality. Relevant plans include the current 2012 Air Quality Management Plan including an update in process for 2016, the Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning (2005), the CEQA Air Quality Analysis Guidance Handbook (1993), the Final 2003 Coachella Valley PM10 SIP (2003), and the Coachella Valley PM10 Attainment Redesignation Request and Maintenance Plan.

III.2.2 Geographic Setting

Section III.1.1, Overview of the Plan Area, describes the Plan Area boundaries encompassing six geomorphic provinces: the Mojave Desert, Basin and Range, Colorado Desert, Sierra Nevada (southern portion only), Transverse Ranges (eastern portion only), and Peninsular Ranges (eastern portion only). (California Geological Survey 2002) (see also Figure III.1-1). The Plan Area includes portions of four air basins — the Great Basin Valleys Air Basin, the Mojave Desert Air Basin, the Salton Sea Air Basin, and the San Diego Air Basin (Figure III.2-3).

III.2.3 Air Quality Baseline Analysis for the Plan Area

Air quality at a particular location is a function of the types amounts, and dispersal rates of pollutants emitted into the air locally and throughout the basin. The major factors affecting pollutant dispersion are wind speed and direction, the vertical dispersion of pollutants (affected by inversions, surface roughness, and other factors), and the local topography.

Air quality is commonly expressed as the number of days in which air pollution levels exceed either federal standards set by the EPA or state standards set by CARB. CARB, air districts and the NPS operate 33 air-monitoring stations within the Plan Area (see Figure III.2-3). There are an additional 5 air monitoring stations within 10 miles of the Plan Area. Air pollutant concentrations and meteorological information are continuously recorded at these stations. Scientists then use these measurements to help forecast daily air pollution levels.

III.2.3.1 Ozone

Nitrogen oxides and hydrocarbons (reactive organic gases) are the chief precursors of ozone. These compounds react in the presence of sunlight to produce ozone. Because sunlight plays

such an important role in its formation, ozone pollution, or smog, is mainly a concern during the daytime in summer months. As mentioned, the EPA phased out the national 1-hour ozone standard and replaced it with the more stringent 8-hour ozone standard to counter the adverse health effects from prolonged exposure.

Not all of the ozone within the Plan Area is necessarily from local sources. Under certain meteorological conditions, ozone and other pollutants travel from upwind air basins and combine with ozone formed from local emission sources, raising ozone levels in the area. Local agencies cannot control either the source or the transportation of pollutants from outside air basins under their jurisdiction. Therefore, the general policy of the local air districts is to control local sources effectively enough to reduce locally produced contamination to clean air standards.

III.2.3.2 PM10

PM10, the coarse inhalable particulate matter with an aerodynamic diameter of 10 microns or less, is about one-seventh of the diameter of a human hair. Particulate matter is a complex mixture of very tiny solid or liquid particles composed of chemicals, soot, and dust. Under typical conditions (for example, no wildfires) particles classified under the PM10 category are mainly emitted directly from activities that disturb the soil including travel on roads, construction, mining, and agricultural operations. Other sources include windblown dust, salts, brake dust, and tire wear.

III.2.3.3 PM2.5

Airborne, fine inhalable particles with aerodynamic diameters of 2.5 microns or less are air quality concerns that require regular monitoring. Fine particles can be emitted directly from fires or fuel combustion or formed from chemical reactions in the air. These chemicals come from a variety of sources including cars, trucks, buses, construction equipment, industrial facilities and power plants. Construction activities are also a source of PM2.5.

III.2.3.4 Nitrogen Dioxide

Motor vehicles, industrial facilities, and power plants emit nitrogen dioxide (NO_2). Nitrogen dioxide and nitric oxide are products of all types of combustion. In the summer months, NO_2 is a major component of photochemical smog. At ambient concentration levels nitrogen dioxide is an irritating gas that may constrict the airways of asthmatics and increase the susceptibility to infection in the general population.

III.2.3.5 Sulfur Dioxide

Sulfur dioxide (SO_2) is primarily a combustion by-product of coal, fuel oil, and diesel fuel. Only small quantities of SO_2 come from gasoline-fueled motor vehicle exhaust. Sulfur dioxide is emitted directly into the atmosphere and can remain suspended for days, allowing for its wide distribution. Sulfur dioxide can constrict human airways, causing particular difficulties for asthmatics. Children can experience increased respiratory tract infections and even healthy people may experience sore throats, coughing, and breathing difficulties. Long-term exposure is associated with the increased risk of death from respiratory or cardiovascular disease.

III.2.3.6 Carbon Monoxide

Carbon monoxide (CO), a by-product of incomplete combustion, is emitted directly into the atmosphere primarily from motor vehicle exhaust. Carbon monoxide concentrations typically peak nearest its source, such as roadways, and decrease rapidly as distance increases from the source. The lungs readily absorb carbon monoxide. It decreases the blood's ability to transport oxygen, leading to health risks for unborn children and people suffering from heart and lung diseases. The symptoms of excessive exposure—headaches, fatigue, slow reflexes, and dizziness—also occur in healthy people.

III.2.3.7 Lead

Lead is a harmful air pollutant identified by CARB as a toxic air contaminant. Certain forms of lead can be found in air, water, soil, food, consumer products, dust, and lead-based paint chips. Lead in the air can cause lead levels in the blood to increase, which in turn can increase the likelihood of cancer and noncancerous health affects in both adults and children. Lead can affect the nervous, reproductive, digestive, and blood-forming systems, and can affect the kidneys. Children are especially sensitive to lead in the air since they absorb lead more easily and have developing nervous systems that are susceptible to adverse lead-related health effects, including learning disabilities.

III.2.4 Air Quality within the Plan Area

III.2.4.1 Air Quality – Federal Standards

As discussed above, if an air basin is not in either federal or state attainment for a particular pollutant, the basin is classified as a nonattainment area. Figure III.2-4 shows the 1997 8-hour ozone standard attainment status of the areas in and around the Plan Area. As seen in this figure, the attainment status within the Plan Area ranges from unclassified/attainment to severe-15 nonattainment under Subpart 2.

Figure III.2-5 shows the 2008 8-hour ozone standard attainment status for the areas in and around the Plan Area. As seen in this figure, the attainment status within the Plan Area ranges from unclassified/attainment to severe-15 nonattainment.

Figure III.2-6 shows the 24-hour PM10 attainment status of the areas in and around the Plan Area. As seen in this figure, the attainment status within the Plan Area ranges from attainment (maintenance) to serious nonattainment.

Figure III.2-7 shows the 24-hour PM2.5 attainment status of the areas in and around the Plan Area. As seen in this figure, only a portion of the Salton Sea Air Basin in Imperial County is classified as a nonattainment area. The rest of the Plan Area is unclassified/attainment for 24-hour PM2.5.

The air basins within the Plan Area are unclassified/attainment for NO_2, SO_2, CO, annual PM2.5, and lead.

III.2.4.1.1 Great Basin Valleys Air Basin

The Great Basin Valleys Air Basin includes all of Inyo and Mono counties. As discussed above and seen in Figures III.2-4 through III.2-7, the Great Basin Valleys Air Basin is in attainment for all pollutant standards except for those related to PM10. The Owens Valley Planning Area is a Serious PM10 nonattainment area, while the Coso Junction Planning Area is a PM10 maintenance area. The remainder of the Great Basin Valleys Air Basin is unclassified/attainment for PM10. Table III.2-4 summarizes the air quality data in the Great Basin Valleys Air Basin during the years 2006 to 2012.

Owens Lake is the largest single source of PM10 in the nation (Great Basin Unified APCD 2011). To deal with this issue, the Great Basin Unified APCD developed the 2008 Owens Valley PM10 Planning Area Demonstration of Attainment SIP. This SIP contains the Great Basin Unified APCD's strategy for attaining federal PM10 standards.

Table III.2-4
Ambient Air Quality Summary with Respect to Federal Standards – Great Basin Valleys Air Basin

Pollutant	Average Time	National Ambient Air Quality Standards[b]	Attainment Status[c]	Maximum Concentration–2006	Maximum Concentration–2007	Maximum Concentration–2008	Maximum Concentration–2009	Maximum Concentration–2010	Maximum Concentration–2011	Maximum Concentration–2012	Number of Days Exceeding National Standard–2006	Number of Days Exceeding National Standard–2007	Number of Days Exceeding National Standard–2008	Number of Days Exceeding National Standard–2009	Number of Days Exceeding National Standard–2010	Number of Days Exceeding National Standard–2011	Number of Days Exceeding National Standard–2012
O_3	8 hrs	0.075 ppm	A	0.088	0.094	0.094	0.086	0.076	0.079	0.077	9	18	5	2	1	3	1
CO	1 hr	35 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
CO	8 hrs	9 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
NO_2	1 hr	0.100 ppm[d]	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
NO_2	Annual	0.053 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
SO_2	1 hr	0.075 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
PM10	24 hrs	150 µg/m^3	U, A, N	8299	10020	2769	1506	4570	13380	3972	9/9.74*	14/23.67*	7/9.1*	5/5.02*	16/16.00*	9/10.69*	24/24.00*
PM2.5	24 hrs	35 µg/m^3	A	22	35	44	36	18/8.2	61/44.1	24/28.1	1/Na*	2/6.3*	4/12.1*	4/8.7*	5/5.0*	9/9.0*	4/4.0*
PM2.5	Annual	12 µg/m^3	A	Na	5.8	7.1	6.8	7.1	8.1	6.7	NX	NX	NX	NX	NX	NX	NX

Source: CARB 2011c. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html; CARB 2013. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html.

* Measured Days/Calculated Days – Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year. Data to determine federal calculated days were not available.

[a] California standards for ozone, carbon monoxide (except at Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM10 are values that are not to be exceeded. Some measurements gathered for pollutants with air quality standards that are based upon 1-hour, 8-hour, or 24-hour averages, may be excluded if CARB determines they would occur less than once per year on average.

[b] National standards other than for ozone and particulates, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.

[c] A = attainment; N = nonattainment; U = Unclassifiable; Na = data not available; NX = annual average not exceeded

[d] Effective January 22, 2010. Not applicable to monitoring from 2005 through 2009.

ppm = parts per million, µg/m^3 = micrograms per cubic meter.

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); EPA (2013)

FIGURE III.2-4

1997 Federal 8-hour Ozone Attainment Status

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.2-Air\figIII.2-4.mxd 8/19/2014

INTENTIONALLY LEFT BLANK



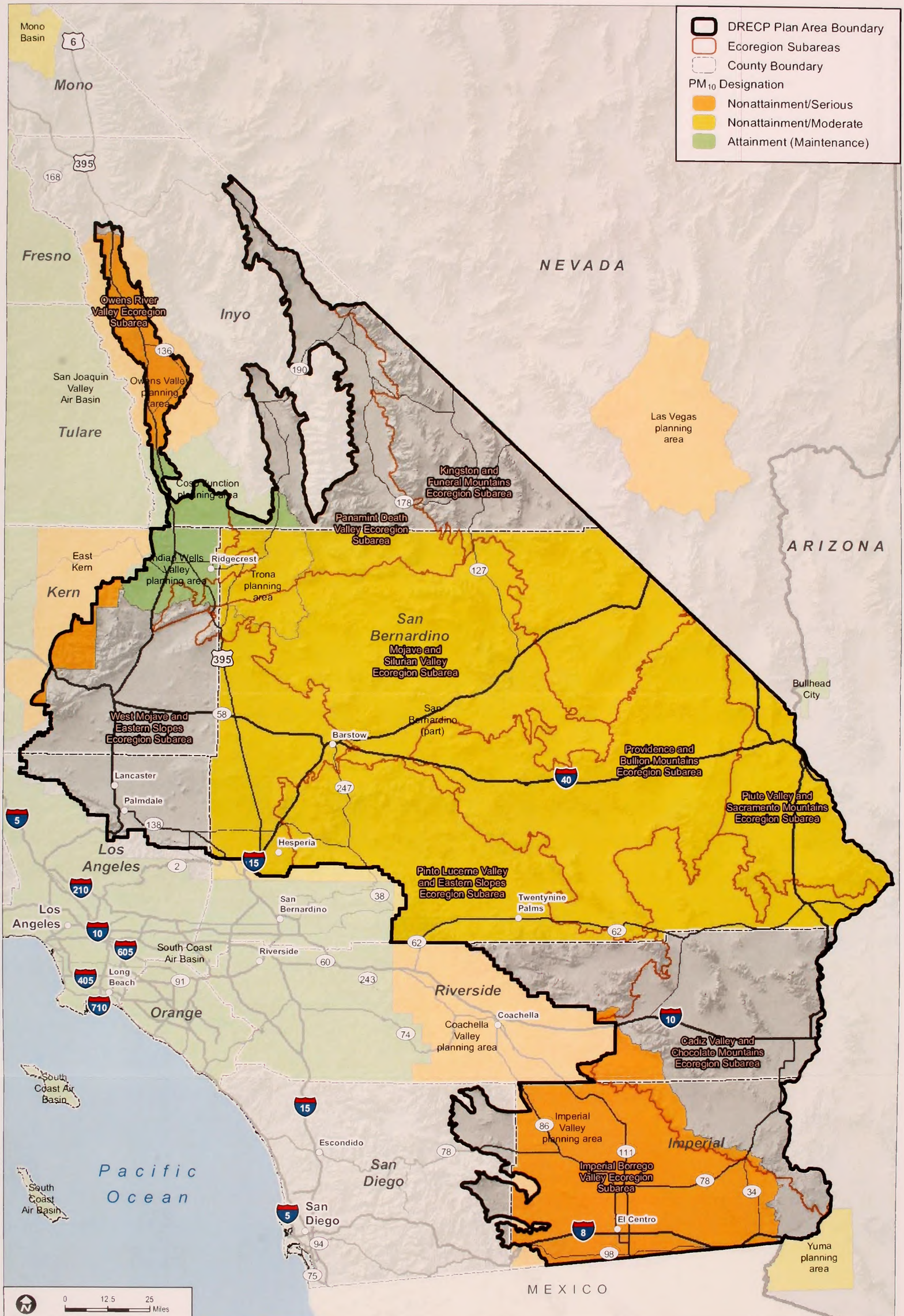
Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CARB (2011)

FIGURE III.2-5

2008 Federal 8-hour Ozone Attainment Status

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.2-Air\figIII.2-5.mxd 8/19/2014

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); EPA (2013)

FIGURE III.2-6

Federal PM_{10} Attainment Status

Draft DRECP and EIR/EIS

August 2014

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.2-Air\figIII.2-6.mxd 8/19/2014

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); EPA (2013)

FIGURE III.2-7

Federal $PM_{2.5}$ Attainment Status

Draft DRECP and EIR/EIS

August 2014

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.2-Air\figIII.2-7.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

III.2.4.1.2 Mojave Desert Air Basin

The Mojave Desert Air Basin includes portions of Kern, Los Angeles, Riverside, and San Bernardino counties. As discussed above and seen in Figures III.2-4 through III.2-7, the Mojave Desert Air Basin is in attainment of all pollutant standards except for those related to ozone and PM10. A large portion of San Bernardino County (including the Trona Planning Area) is a moderate PM10 nonattainment area, a portion of East Kern County in the basin is a Serious PM10 nonattainment area, and the Indian Wells Planning Area (also in Kern County) is a PM10 maintenance area. The remainder of the Mojave Desert Air Basin is unclassified/attainment for PM10.

A portion of Eastern Kern County within the basin was a moderate 1997 8-hour ozone nonattainment area; however, effective January 2013, the EPA determined that Eastern Kern County attained the federal 1997 8-hour ozone standard. Portions of Los Angeles and San Bernardino counties are severe-15 1997 8-hour ozone nonattainment areas under Subpart 2. A portion of Eastern Kern County within the basin is a marginal 2008 8-hour ozone nonattainment area, and portions of Los Angeles and San Bernardino counties in the western portions of the Mojave Desert Air Basin are severe-15 2008 8-hour ozone nonattainment areas.

Table III.2-5 summarizes the air quality data in the Mojave Desert Air Basin during the years 2006 to 2012.

III.2.4.1.3 Salton Sea Air Basin

The Salton Sea Air Basin includes portions of Riverside County and all of Imperial County. As discussed above and seen in Figures III.2-4 through III.2-7, the Salton Sea Air Basin is in attainment of all pollutant standards except for those related to ozone, PM10, and PM2.5. The Coachella Valley (Riverside County) portion of the basin within the Plan Area is a serious PM10 nonattainment area, as is the Imperial Valley Planning Area in Imperial County. The remainder of the Salton Sea Air Basin within the Plan Area is unclassified/attainment for PM10.

A portion of south-central Imperial County is nonattainment for the PM2.5 24-hour standard. The remainder of the Salton Sea Air Basin is unclassified/attainment for the PM2.5 24-hour standard.

The Riverside County portion of the Salton Sea Air Basin is a severe-15 1997 8-hour ozone nonattainment area under Subpart 2. The Imperial County portion of the Salton Sea Air Basin is a moderate 1997 8-hour ozone nonattainment area under Subpart 2. The Riverside County portion of the Salton Sea Air Basin is a severe-15 2008 8-hour ozone nonattainment

area. The Imperial County portion of the Salton Sea Air Basin is a marginal 2008 8-hour ozone nonattainment area.

Table III.2-6 summarizes the air quality data in the Salton Sea Air Basin during the years 2006 to 2012.

III.2.4.1.4 San Diego Air Basin

The San Diego Air Basin includes all of San Diego County. As discussed above and seen in Figures III.2-4 through III.2-7, the San Diego Air Basin is in attainment of all pollutant standards except for those related to ozone. The San Diego Air Basin was previously a 1997 8-hour ozone nonattainment area under Subpart 1. However, on May 14, 2013, San Diego County was redesignated to an ozone attainment area for the 1997 8-hour ozone; their plan for continuing to attain the 1997 ozone standard for 10 years beyond redesignation was approved. The San Diego Air Basin is a marginal 2008 8-hour ozone nonattainment area.

Table III.2-7 summarizes the air quality data in the San Diego Air Basin during the years 2006 to 2012.

III.2.4.2 Air Quality – State Standards

Ozone

All air basins of the Plan Area are nonattainment for the state ozone standards.

PM10

All air basins of the Plan Area are nonattainment for the state PM10 standards.

PM2.5

Figure III.2-8 shows the state PM2.5 attainment status of the air basins in and around the Plan Area. As seen in this figure, within the Plan Area the San Bernardino County portion of the federal Southeast Desert Modified Air Quality Management Area for ozone is classified as a PM2.5 nonattainment area, as is the portion of the Plan Area within the San Diego Air Basin. The rest of the Plan Area is unclassified/attainment for PM2.5.

Table III.2-5
Ambient Air Quality Summary with Respect to Federal Standards – Mojave Desert Air Basin

Pollutant	Average Time	National Ambient Air Quality Standards[b]	Attainment Status[c]	Maximum Concentration–2006	Maximum Concentration–2007	Maximum Concentration–2008	Maximum Concentration–2009	Maximum Concentration–2010	Maximum Concentration–2011	Maximum Concentration–2012	Number of Days Exceeding National Standard–2006	Number of Days Exceeding National Standard–2007	Number of Days Exceeding National Standard–2008	Number of Days Exceeding National Standard–2009	Number of Days Exceeding National Standard–2010	Number of Days Exceeding National Standard–2011	Number of Days Exceeding National Standard–2012
O_3	8 hrs	0.075 ppm	A	0.124	0.109	0.110	0.104	0.114	0.113	0.108	100	98	107	87	91	95	81
CO	1 hr	35 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
CO	8 hrs	9 ppm	A	1.6	1.61	1.23	1.14	5.17	1.51	1.83	0	0	0	0	0	0	0
NO_2	1 hr	0.100 ppm[d]	A	0.073	0.068	0.066	0.059	0.065	0.062	0.096	0	0	0	0	2	0	7
NO_2	Annual	0.053 ppm	A	0.015	0.014	0.013	0.012	0.012	0.015	Na	NX	NX	NX	NX	NX	NX	Na
SO_2	1 hr	0.075 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
PM10	24 hrs	150 $\mu g/m^3$	U, A, N	184.3	358.0	285.5	307.2	96.3	143.4	181.6	2/2.2*	1/7.0*	2/Na*	1/1.0*	0/Na*	0/0.0	1/Na*
PM2.5	24 hrs	35 $\mu g/m^3$	A	19.0	20.0	17.8	17.0	15.0	50.0	21.8	0	0	0	0	0	1/0.0*	2/2.1*
PM2.5	Annual	12 $\mu g/m^3$	A	10.4	9.7	7.1	9.0	7.2	6.3	6.5	NX	NX	NX	NX	NX	NX	NX

Source: CARB 2011c. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html; CARB 2013. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html.

* Measured Days/Calculated Days – Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year. Data to determine federal calculated days were not available.

[a] California standards for ozone, carbon monoxide (except at Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM10 are values that are not to be exceeded. Some measurements gathered for pollutants with air quality standards that are based upon 1-hour, 8-hour, or 24-hour averages, may be excluded if the CARB determines they would occur less than once per year on average.

[b] National standards other than for ozone and particulates, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.

[c] A = attainment; N = nonattainment; U = Unclassifiable; N/A = not applicable; Na = data not available; NX = annual average not exceeded; EX = annual average exceeded.

[d] Effective January 22, 2010. Not applicable to monitoring from 2005 through 2009.

ppm = parts per million, $\mu g/m^3$ = micrograms per cubic meter.

Table III.2-6
Ambient Air Quality Summary with Respect to Federal Standards – Salton Sea Air Basin

Pollutant	Average Time	National Ambient Air Quality Standards[b]	Attainment Status[c]	Maximum Concentration–2006	Maximum Concentration–2007	Maximum Concentration–2008	Maximum Concentration–2009	Maximum Concentration–2010	Maximum Concentration–2011	Maximum Concentration–2012	Number of Days Exceeding National Standard–2006	Number of Days Exceeding National Standard–2007	Number of Days Exceeding National Standard–2008	Number of Days Exceeding National Standard–2009	Number of Days Exceeding National Standard–2010	Number of Days Exceeding National Standard–2011	Number of Days Exceeding National Standard–2012
O_3	8 hrs	0.075 ppm	N	0.109	0.102	0.101	0.098	0.099	0.098	0.100	72	68	57	59	63	59	58
CO	1 hr	35 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
CO	8 hrs	9 ppm	A	9.76	7.53	6.34	7.46	5.61	9.01	4.47	1	0	0	0	0	0	0

Table III.2-6
Ambient Air Quality Summary with Respect to Federal Standards – Salton Sea Air Basin

Pollutant	Average Time	National Ambient Air Quality Standards[b]	Attainment Status[c]	Maximum Concentration–2006	Maximum Concentration–2007	Maximum Concentration–2008	Maximum Concentration–2009	Maximum Concentration–2010	Maximum Concentration–2011	Maximum Concentration–2012	Number of Days Exceeding National Standard–2006	Number of Days Exceeding National Standard–2007	Number of Days Exceeding National Standard–2008	Number of Days Exceeding National Standard–2009	Number of Days Exceeding National Standard–2010	Number of Days Exceeding National Standard–2011	Number of Days Exceeding National Standard–2012
NO_2	1 hr	0.100 ppm[d]	A	0.80	0.77	0.73	0.072	0.068	0.063	0.066	2	3	1	1	1	2	0
NO_2	Annual	0.053 ppm	A	0.014	0.014	0.014	0.014	0.014	0.014	0.014	NX	NX	NX	NX	NX	NX	NX
SO_2	1 hr	0.075 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
PM10	24 hrs	150 $\mu g/m^3$	N	261	296	138	265.8	117.3	324	387.3	3/16.3*	2/13.0*	3/3.0*	3/18.3*	0/0	2/2.0*	2/9.9*
PM2.5	24 hrs	35 $\mu g/m^3$	A, N	46.0	38.5	24.0	39.9	31.7	29.4	56.3	5/17.1*	3/9.2*	1/0*	4/3.1*	2/6.3*	3/6.2*	4/13.1*
PM2.5	Annual	12 $\mu g/m^3$	A, N	12.5	13.0	8.4	8.0	12.8	7.5	15.8	EX	EX	NX	NX	EX	NX	EX

Source: CARB 2011c. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html. CARB 2013. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html.

* Measured Days/Calculated Days – Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year. Data to determine federal calculated days were not available.

[a] California standards for ozone, carbon monoxide (except at Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM10 are values that are not to be exceeded. Some measurements gathered for pollutants with air quality standards that are based upon 1-hour, 8-hour, or 24-hour averages, may be excluded if the CARB determines they would occur less than once per year on average.

[b] National standards other than for ozone and particulates, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.

[c] A = attainment; N = nonattainment; U = Unclassifiable; N/A = not applicable; Na = data not available; NX = annual average not exceeded; EX = annual average exceeded.

[d] Effective January 22, 2010. Not applicable to monitoring from 2005 through 2009.

ppm = parts per million, $\mu g/m^3$ = micrograms per cubic meter.

Table III.2-7
Ambient Air Quality Summary with Respect to Federal Standards – San Diego Air Basin

Pollutant	Average Time	National Ambient Air Quality Standards[b]	Attainment Status[c]	Maximum Concentration–2006	Maximum Concentration–2007	Maximum Concentration–2008	Maximum Concentration–2009	Maximum Concentration–2010	Maximum Concentration–2011	Maximum Concentration–2012	Number of Days Exceeding National Standard–2006	Number of Days Exceeding National Standard–2007	Number of Days Exceeding National Standard–2008	Number of Days Exceeding National Standard–2009	Number of Days Exceeding National Standard–2010	Number of Days Exceeding National Standard–2011	Number of Days Exceeding National Standard–2012
O_3	8 hrs	0.075 ppm	N	0.100	0.092	0.109	0.097	0.088	0.093	0.083	38	27	35	24	14	10	10
CO	1 hr	35 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
CO	8 hrs	9 ppm	A	3.61	5.18	3.51	3.54	2.46	2.44	3.61	0	0	0	0	0	0	0
NO_2	1 hr	0.100 ppm[d]	A	0.086	0.082	0.095	0.077	0.074	0.073	0.072	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NO_2	Annual	0.053 ppm	A	0.024	0.022	0.024	0.021	0.021	0.020	0.020	NX	NX	NX	NX	NX	NX	NX

Table III.2-7
Ambient Air Quality Summary with Respect to Federal Standards – San Diego Air Basin

Pollutant	Average Time	National Ambient Air Quality Standards[b]	Attainment Status[c]	Maximum Concentration–2006	Maximum Concentration–2007	Maximum Concentration–2008	Maximum Concentration–2009	Maximum Concentration–2010	Maximum Concentration–2011	Maximum Concentration–2012	Number of Days Exceeding National Standard–2006	Number of Days Exceeding National Standard–2007	Number of Days Exceeding National Standard–2008	Number of Days Exceeding National Standard–2009	Number of Days Exceeding National Standard–2010	Number of Days Exceeding National Standard–2011	Number of Days Exceeding National Standard–2012
SO_2	1 hr	0.075 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
PM10	24 hrs	150 $\mu g/m^3$	U	134	392	158	123	108	126	126	0/0.0*	1/6.1*	1/6.1*	0/N0.0*	0/0.0*	0/0.0*	0/Na*
PM2.5	24 hrs	35 $\mu g/m^3$	A	28.4	37.7	30.2	25.2	26.6	27.4	26.0	3/2.1*	17/11.4*	5/3.5*	4/3.4*	2/2.0*	3/3.0*	2/1.0*
PM2.5	Annual	15 $\mu g/m^3$	A	13.1	13.3	13.7	13.5	12.7	13.2	13.1	NX	NX	NX	NX	NX	NX	NX

Source: CARB 2011c. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html; CARB 2013. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html.

* Measured Days/Calculated Days – Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year. Data to determine federal calculated days were not available.

[a] California standards for ozone, carbon monoxide (except at Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM10 are values that are not to be exceeded. Some measurements gathered for pollutants with air quality standards that are based upon 1-hour, 8-hour, or 24-hour averages, may be excluded if the CARB determines they would occur less than once per year on average.

[b] National standards other than for ozone and particulates, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.

[c] A = attainment; N = nonattainment; U = Unclassifiable; N/A = not applicable; Na = data not available; NX = annual average not exceeded.

[d] Effective January 22, 2010. Not applicable to monitoring from 2005 through 2009.

ppm = parts per million, $\mu g/m^3$ = micrograms per cubic meter.

Note that the Plan Area only includes a small portion of the San Diego Air Basin, and none of the San Diego Air Basin monitoring stations are located within the Plan Area. This data is provided for informational purposes.

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CARB (2004)

FIGURE III.2-8

State $PM_{2.5}$ Attainment Status

Draft DRECP and EIR/EIS

August 2014

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.2-Air\figIII.2-8.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

Hydrogen Sulfide

Figure III.2-9 shows the state hydrogen sulfide (H_2S) attainment status of the air basins in and around the Plan Area. As seen in this figure, within the Plan Area the portion of the Searles Valley Planning Area in San Bernardino County is classified as an H_2S nonattainment area. The rest of the Plan Area is unclassified/attainment for H_2S.

Carbon Monoxide, Lead, Nitrogen Dioxide, Sulfates, Sulfur Dioxide, and Visibility Reducing Particles

All air basins within the Plan Area are unclassified/attainment with regard to state standards for CO, lead, NO_2, sulfates, SO_2, and visibility reducing particles.

III.2.4.2.1 Great Basin Valleys Air Basin

The Great Basin Valleys Air Basin is nonattainment for ozone and PM10. The Great Basin Valleys Air Basin is unclassified/attainment for all other state standards. Table III.2-8 summarizes the air quality data in the Great Basin Valleys Air Basin during the years 2006 to 2012.

III.2.4.2.2 Mojave Desert Air Basin

The Mojave Desert Air Basin is nonattainment for ozone and PM10. The San Bernardino County portion of the federal Southeast Desert Modified Air Quality Management Area for Ozone is classified as a PM2.5 nonattainment area. The Searles Valley Planning Area in San Bernardino County is classified as an H_2S nonattainment area. The Mojave Desert Air Basin is unclassified/attainment for all other state standards.

Table III.2-9 summarizes the air quality data in the Mojave Desert Air Basin during the years 2006 to 2012.

III.2.4.2.3 Salton Sea Air Basin

The Salton Sea Air Basin is nonattainment for ozone and PM10. The Salton Sea Air Basin is unclassified/attainment for all other state standards. Table III.2-10 summarizes the air quality data in the Salton Sea Air Basin during the years 2006 to 2012.

III.2.4.2.4 San Diego Air Basin

The San Diego Air Basin includes all of San Diego County. As discussed above, the San Diego Air Basin is nonattainment for ozone, PM10 and PM2.5. The San Diego Air Basin is unclassified/attainment for all other state standards. Table III.2-11 summarizes the air quality data in the San Diego Air Basin during the years 2006 to 2012.

III.2.5 Air Quality within the DRECP Ecoregion Subareas

As indicated above, the Plan Area overlies portions of four air basins. Areas within each air basin share the same air masses and are expected to have similar ambient air quality. Therefore, the air quality within each ecoregion subarea within the Plan Area is dependent on the associated air basin(s). The current air quality conditions for each of the affected air basins are described in Section III.2.4.

Table III.2-12 provides a breakdown of the air basins associated with each ecoregion subarea. As seen from this table, the Plan Area encompasses approximately 33% of the Great Basin Valleys Air Basin, approximately 94% of the Mojave Desert Air Basin, approximately 70% of the Salton Sea Air Basin, and approximately 10% of the San Diego Air Basin. Further breakdowns for each ecoregion subarea follow.

III.2.5.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea

The Cadiz Valley and Chocolate Mountains ecoregion subarea lies within portions of the Mojave Desert and Salton Sea Air Basins. Approximately 74% of the ecoregion subarea lies within the Mojave Desert Air Basin, and 26% of the ecoregion subarea lies within the Salton Sea Air Basin (see Figure III.2-3). This ecoregion subarea is within the jurisdictional boundaries of the Imperial County APCD, the Mojave Desert AQMD, and the South Coast AQMD (see Figure III.2-2). Figure III.2-1shows that this ecoregion subarea contains a small portion of the Joshua Tree National Park, a federal Class I area.

Portions of the Cadiz Valley and Chocolate Mountains ecoregion subarea are designated moderate or severe-15 nonattainment under Subpart 2 for the 1997 federal 8-hour ozone standards (see Figure III.2-4). Portions of this ecoregion subarea are designated marginal or severe-15 nonattainment for the 2008 federal 8-hour ozone standards (see Figure III.2-5). Portions of this ecoregion subarea are designated moderate or serious nonattainment for the federal PM10 standards (see Figure III.2-6). This ecoregion subarea is unclassifiable/attainment for the federal PM2.5 standards (see Figure III.2-7).

Table III.2-8
Ambient Air Quality Summary with Respect to State Standards – Great Basin Valleys Air Basin

Pollutant	Average Time	California Ambient Air Quality Standards[a]	Attainment Status	Maximum Concentration–2006	Maximum Concentration–2007	Maximum Concentration–2008	Maximum Concentration–2009	Maximum Concentration–2010	Maximum Concentration–2011	Maximum Concentration–2012	Number of Days Exceeding State Standard–2006	Number of Days Exceeding State Standard–2007	Number of Days Exceeding State Standard–2008	Number of Days Exceeding State Standard–2009	Number of Days Exceeding State Standard–2010	Number of Days Exceeding State Standard–2011	Number of Days Exceeding State Standard–2012
O_3	1 hr	0.09 ppm	U, N	0.092	0.107	0.098	0.098	0.081	0.084	0.082	0	3	1	1	0	0	0
O_3	8 hrs	0.07ppm	U, N	0.089	0.095	0.095	0.086	0.077	0.079	0.078	33	35	21	4	2	20	8
CO	1 hr	20 ppm	U, A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
CO	8 hrs	9 ppm	U, A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
NO_2	1 hr	0.18 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
NO_2	Annual	0.030 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
SO_2	1 hr	0.25 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
SO_2	24 hrs	0.04 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
PM10	24 hrs	50 $\mu g/m^3$	N	7709	8338	2342	433	248	999	499	36/38.2*	26/3.2*	24/23.6*	25/26.0*	16/18.4*	31/34.8*	17/20.3*
PM10	Annual	20 $\mu g/m^3$	N	63	14.5	21.9	22.6	16.5	25.6	19.7	EX	NX	EX	EX	NX	EX	NX
PM2.5	Annual	12 $\mu g/m^3$	A	Na	5.8	7.1	Na	Na	Na	Na	NX	NX	NX	Na	Na	Na	Na
H_2S	1 hr	0.03 ppm	A	0.005	0.008	0.010	0.010	0.015	0.007	0.009	0	0	0	0	0	0	0

Source: CARB 2011c. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html; CARB 2013. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html.

* Measured Days/Calculated Days – Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year. Data to determine federal calculated days were not available.

[a] California standards for ozone, carbon monoxide (except at Lake Tahoe), sulfur dioxide (1-hr and 24-hr), nitrogen dioxide, and PM10 are values that are not to be exceeded. Some measurements gathered for pollutants with air quality standards that are based upon 1-hr, 8-hr, or 24-hr averages, may be excluded if CARB determines they would occur less than once per year on average.

[b] National standards other than for ozone and particulates, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The 1-hr ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.

[c] A = attainment; N = nonattainment; U = Unclassifiable; N/A = not applicable; Na = data not available; NX = annual average not exceeded; EX = annual average exceeded.

[d] Effective January 22, 2010. Not applicable to monitoring from 2005 through 2009.

ppm = parts per million, $\mu g/m^3$ = micrograms per cubic meter.

Table III.2-9
Ambient Air Quality Summary with Respect to State Standards – Mojave Desert Air Basin

Pollutant	Average Time	California Ambient Air Quality Standards[a]	Attainment Status	Maximum Concentration–2006	Maximum Concentration–2007	Maximum Concentration–2008	Maximum Concentration–2009	Maximum Concentration–2010	Maximum Concentration–2011	Maximum Concentration–2012	Number of Days Exceeding State Standard–2006	Number of Days Exceeding State Standard–2007	Number of Days Exceeding State Standard–2008	Number of Days Exceeding State Standard–2009	Number of Days Exceeding State Standard–2010	Number of Days Exceeding State Standard–2011	Number of Days Exceeding State Standard–2012
O_3	1 hr	0.09 ppm	N	0.148	0.132	0.140	0.123	0.137	0.132	0.119	61	50	71	51	46	57	44
O_3	8 hrs	0.07ppm	N	0.125	0.110	0.110	0.104	0.114	0.114	0.108	124	124	134	120	121	138	123

Table III.2-9
Ambient Air Quality Summary with Respect to State Standards – Mojave Desert Air Basin

Pollutant	Average Time	California Ambient Air Quality Standards[a]	Attainment Status	Maximum Concentration–2006	Maximum Concentration–2007	Maximum Concentration–2008	Maximum Concentration–2009	Maximum Concentration–2010	Maximum Concentration–2011	Maximum Concentration–2012	Number of Days Exceeding State Standard–2006	Number of Days Exceeding State Standard–2007	Number of Days Exceeding State Standard–2008	Number of Days Exceeding State Standard–2009	Number of Days Exceeding State Standard–2010	Number of Days Exceeding State Standard–2011	Number of Days Exceeding State Standard–2012
CO	1 hr	20 ppm	U, A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
CO	8 hrs	9 ppm	U, A	1.6	1.61	1.23	1.14	5.17	1.51	1.83	0	0	0	0	0	0	0
NO_2	1 hr	0.18 ppm	A	0.082	0.073	0.081	0.065	0.137	0.077	0.146	0	0	0	0	0	0	0
NO_2	Annual	0.030 ppm	A	0.015	0.014	0.013	0.012	0.012	0.015	Na	NX	NX	NX	NX	NX	NX	Na
SO_2	1 hr	0.25 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
SO_2	24 hrs	0.04 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
PM10	24 hrs	50 $\mu g/m^3$	N	77.0	339	144.8	81.0	829.0	138.7	96.6	4/25.6*	6/36.6*	3/13.0*	2/12.2*	2/0.0*	18/11.8*	18/19.*
PM10	Annual	20 $\mu g/m^3$	N	30.4	35.9	22.3	25.0	18.7	22.3	27.5	EX	EX	EX	EX	NX	EX	EX
PM2.5	Annual	12 $\mu g/m^3$	A	10.3	9.7	Na	9.3	7.6	Na	Na	NX	NX	NX	NX	NX	NX	NX
H_2S	1 hr	0.03 ppm	A	0.100	0.197	0.112	0.343	0.077	0.073	0.078	71	119	104	33	48	91	80

Source: CARB 2011c. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html; CARB 2013. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html.

* Measured Days/Calculated Days – Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year. Data to determine federal calculated days were not available.

[a] California standards for ozone, carbon monoxide (except at Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM10 are values that are not to be exceeded. Some measurements gathered for pollutants with air quality standards that are based upon 1-hour, 8-hour, or 24-hour averages, may be excluded if CARB determines they would occur less than once per year on average.

[b] National standards other than for ozone and particulates, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.

[c] A = attainment; N = nonattainment; U = Unclassifiable; N/A = not applicable; Na = data not available; NX = annual average not exceeded; EX = annual average exceeded.

[d] Effective January 22, 2010. Not applicable to monitoring from 2005 through 2009.

ppm = parts per million, $\mu g/m^3$ = micrograms per cubic meter.

Table III.2-10
Ambient Air Quality Summary with Respect to State Standards – Salton Sea Air Basin

Pollutant	Average Time	California Ambient Air Quality Standards[a]	Attainment Status	Maximum Concentration–2006	Maximum Concentration–2007	Maximum Concentration–2008	Maximum Concentration–2009	Maximum Concentration–2010	Maximum Concentration–2011	Maximum Concentration–2012	Number of Days Exceeding State Standard–2006	Number of Days Exceeding State Standard–2007	Number of Days Exceeding State Standard–2008	Number of Days Exceeding State Standard–2009	Number of Days Exceeding State Standard–2010	Number of Days Exceeding State Standard–2011	Number of Days Exceeding State Standard–2012
O_3	1 hr	0.09 ppm	N	0.129	0.126	0.135	0.150	0.122	0.124	0.126	51	39	36	40	24	29	27
O_3	8 hrs	0.07ppm	N	0.109	0.102	0.101	0.098	0.099	0.095	0.098	94	99	85	82	94	81	93

Table III.2-10
Ambient Air Quality Summary with Respect to State Standards – Salton Sea Air Basin

Pollutant	Average Time	California Ambient Air Quality Standards[a]	Attainment Status	Maximum Concentration–2006	Maximum Concentration–2007	Maximum Concentration–2008	Maximum Concentration–2009	Maximum Concentration–2010	Maximum Concentration–2011	Maximum Concentration–2012	Number of Days Exceeding State Standard–2006	Number of Days Exceeding State Standard–2007	Number of Days Exceeding State Standard–2008	Number of Days Exceeding State Standard–2009	Number of Days Exceeding State Standard–2010	Number of Days Exceeding State Standard–2011	Number of Days Exceeding State Standard–2012
CO	1 hr	20 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
CO	8 hrs	9 ppm	A	9.76	7.53	6.34	7.46	5.61	9.01	4.47	1	0	0	0	0	0	0
NO_2	1 hr	0.18 ppm	A	0.101	0.112	0.146	0.122	0.141	0.130	0.081	0	0	0	0	0	0	0
NO_2	Annual	0.030 ppm	A	0.012	0.012	0.012	0.010	0.011	0.011	Na	NX	NX	NX	NX	NX	NX	Na
SO_2	1 hr	0.25 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
SO_2	24 hrs	0.04 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
PM10	24 hrs	50 $\mu g/m^3$	N	261	296	138	265.8	117.3	324	387.3	38/240.6*	53/219.1*	31/186.8	34/207.4	43/55.0*	93/93.4*	103/210*
PM10	Annual	20 $\mu g/m^3$	N	71.6	65.5	53.9	65.4	37.7	40.9	63.7	EX	EX	EX	EX	EX	EX	EX
PM2.5	Annual	12 $\mu g/m^3$	U, N	17.3	23.2	17.2	18.7	12.7	12.7	14.2	EX	EX	EX	EX	EX	EX	EX
H_2S	1 hr	0.03 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na

Source: CARB 2011c. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html. CARB 2013. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html.

* Measured Days/Calculated Days – Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year. Data to determine federal calculated days were not available.

[a] California standards for ozone, carbon monoxide (except at Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM10 are values that are not to be exceeded. Some measurements gathered for pollutants with air quality standards that are based upon 1-hour, 8-hour, or 24-hour averages, may be excluded if CARB determines they would occur less than once per year on average.

[b] National standards other than for ozone and particulates, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.

[c] A = attainment; N = nonattainment; U = Unclassifiable; N/A = not applicable; Na = data not available; NX = annual average not exceeded; EX = annual average exceeded.

[d] Effective January 22, 2010. Not applicable to monitoring from 2005 through 2009.

ppm = parts per million, $\mu g/m^3$ = micrograms per cubic meter.

Table III.2-11
Ambient Air Quality Summary with Respect to State Standards – San Diego Air Basin

Pollutant	Average Time	California Ambient Air Quality Standards[a]	Attainment Status	Maximum Concentration–2006	Maximum Concentration–2007	Maximum Concentration–2008	Maximum Concentration–2009	Maximum Concentration–2010	Maximum Concentration–2011	Maximum Concentration–2012	Number of Days Exceeding State Standard–2006	Number of Days Exceeding State Standard–2007	Number of Days Exceeding State Standard–2008	Number of Days Exceeding State Standard–2009	Number of Days Exceeding State Standard–2010	Number of Days Exceeding State Standard–2011	Number of Days Exceeding State Standard–2012
O_3	1 hr	0.09 ppm	N	0.121	0.134	0.139	0.119	0.107	0.114	0.101	23	21	18	8	7	5	2
O_3	8 hrs	0.07 ppm	N	0.1	0.092	0.11	0.098	0.088	0.093	0.084	68	50	69	47	21	33	25
CO	1 hr	20 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na

Table III.2-11
Ambient Air Quality Summary with Respect to State Standards – San Diego Air Basin

Pollutant	Average Time	California Ambient Air Quality Standards[a]	Attainment Status	Maximum Concentration–2006	Maximum Concentration–2007	Maximum Concentration–2008	Maximum Concentration–2009	Maximum Concentration–2010	Maximum Concentration–2011	Maximum Concentration–2012	Number of Days Exceeding State Standard–2006	Number of Days Exceeding State Standard–2007	Number of Days Exceeding State Standard–2008	Number of Days Exceeding State Standard–2009	Number of Days Exceeding State Standard–2010	Number of Days Exceeding State Standard–2011	Number of Days Exceeding State Standard–2012
CO	8 hrs	9 ppm	A	3.61	5.18	3.51	3.54	2.46	2.44	3.61	0	0	0	0	0	0	0
NO_2	1 hr	0.18 ppm	A	0.097	0.101	0.123	0.091	0.091	0.100	0.072	0	0	0	0	0	0	0
NO_2	Annual	0.030 ppm	A	0.017	0.015	0.015	0.016	0.013	0.013	Na	NX	NX	NX	NX	NX	NX	Na
SO_2	1 hr	0.25 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
SO_2	24 hrs	0.04 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
PM10	24 hrs	50 µg/m^3	N	134	392	158	123	108	126	126	27/ 159.4*	27/ 158.6*	30/ 163.4*	25/ 146.4*	22/ 136.0*	23/ 138.5*	6/ 6.1*
PM10	Annual	20 µg/m^3	N	54	58.4	56.1	53.9	47	46.2	24.3	EX	EX	EX	EX	EX	EX	EX
PM2.5	Annual	12 µg/m^3	N	13.1	13.3	14.9	12.2	10.8	10.9	Na	EX	EX	EX	EX	NX	NX	Na
H_2S	1 hr	0.03 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na

Source: CARB 2011c. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html; CARB 2013. California Air Quality Data Statistics. California Air Resources Board website. http://www.arb.ca.gov/adam/welcome.html.

* Measured Days/Calculated Days – Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year. Data to determine federal calculated days were not available.

[a] California standards for ozone, carbon monoxide (except at Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM10 are values that are not to be exceeded. Some measurements gathered for pollutants with air quality standards that are based upon 1-hour, 8-hour, or 24-hour averages, may be excluded if ARB determines they would occur less than once per year on average.

[b] National standards other than for ozone and particulates, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.

[c] A = attainment; N = nonattainment; U = Unclassifiable; N/A = not applicable; Na = data not available; NX = annual average not exceeded; EX = annual average exceeded.

[d] Effective January 22, 2010. Not applicable to monitoring from 2005 through 2009.

ppm = parts per million, µg/m^3 = micrograms per cubic meter.

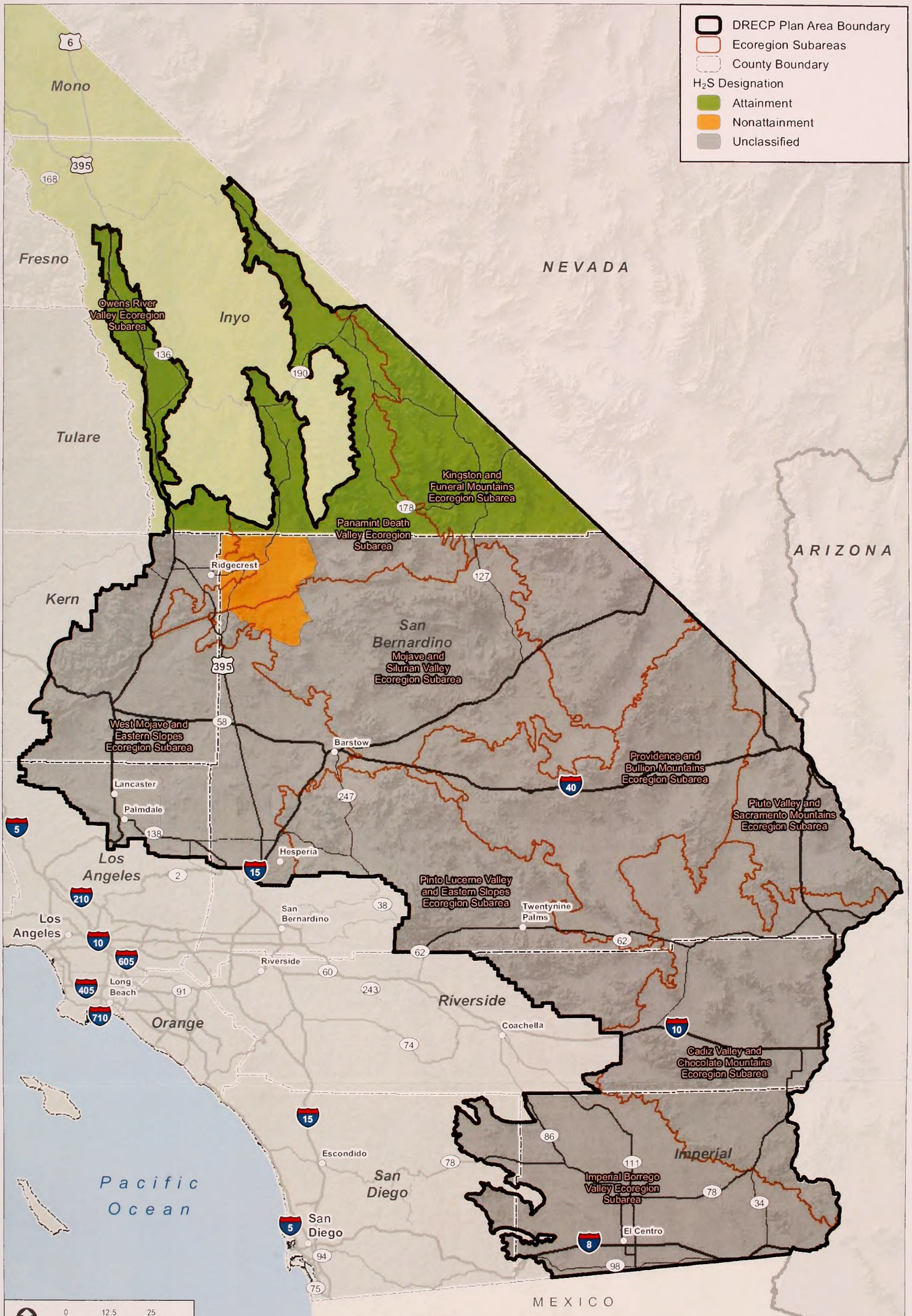
Table III.2-12
DRECP Ecoregion Subarea Air Basins (acres)

Ecoregion Subarea	Great Basin Valleys Air Basin	Mojave Desert Air Basin	Salton Sea Air Basin	San Diego Air Basin	Total
Cadiz Valley and Chocolate Mountains	—	2,253,269 (74%)	798,853 (26%)	—	3,052,122
Imperial Borrego Valley	—	--	2,143,060 (89%)	267,680 (11%)	2,410,740
Kingston and Funeral Mountains	1,203,007 (49%)	1,268,356 (51%)	—	—	2,471,363
Mojave and Silurian Valley	—	2,646,012 (100%)	—	—	2,646,012
Owens River Valley	417,797 (100%)	--	—	—	417,797
Panamint Death Valley	1,252,193 (65%)	686,708 (35%)	—	—	1,938,901
Pinto Lucerne Valley and Eastern Slopes	—	2,308,782 (99.5%)	11,339 (0.5%)	—	2,320,121
Piute Valley and Sacramento Mountains	—	1,091,932 (100%)	—	—	1,091,932
Providence and Bullion Mountains	—	2,616,046 (100%)	—	—	2,616,046

Table III.2-12
DRECP Ecoregion Subarea Air Basins (acres)

Ecoregion Subarea	Great Basin Valleys Air Basin	Mojave Desert Air Basin	Salton Sea Air Basin	San Diego Air Basin	Total
West Mojave and Eastern Slopes	116,841 (3%)	3,511,787 (97%)	—	—	3,628,628
Total	**2,989,838**	**16,382,892**	**2,953,252**	**267,680**	**22,593,662**
Total Air Basin Area	**9,026,556**	**17,396,073**	**4,248,952**	**2,712,291**	**—**
Percentage of Total Air Basin	**33%**	**94%**	**70%**	**10%**	**—**

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CARB (2012).

FIGURE III.2-9

State H_2S Attainment Status

Draft DRECP and EIR/EIS

August 2014

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.2-Air\figIII.2-9.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

As indicated above, all air basins within the Plan Area are designated nonattainment for the state ozone and PM10 standards. The Cadiz Valley and Chocolate Mountains ecoregion subarea is designated unclassified for the state PM2.5 standards (see Figure III.2-8).

III.2.5.2 Imperial Borrego Valley Ecoregion Subarea

The Imperial Borrego Valley ecoregion subarea lies within portions of the Salton Sea and San Diego Air Basins. Approximately 89% of the ecoregion subarea lies within the Salton Sea Air Basin and 11% of the ecoregion subarea lies within the San Diego Air Basin (see Figure III.2-3). This ecoregion subarea is within the jurisdictional boundaries of the Imperial County APCD, the San Diego County APCD, and the South Coast AQMD (see Figure III.2-2).

Much of this ecoregion subarea is designated moderate nonattainment under Subpart 2 for the 1997 federal 8-hour ozone standards; the remaining San Diego Air Basin portion is designated as attainment for the 1997 federal 8-hour ozone standards (see Figure III.2-4). Except for a small piece that is designated severe-15 for the 2008 federal 8-hour ozone standards, all of this ecoregion subarea is designated a marginal nonattainment area for the 2008 federal 8-hour ozone standards (see Figure III.2-5).

Much of the Imperial Borrego Valley ecoregion subarea is designated serious nonattainment for the federal PM10 standards (see Figure III.2-6). A portion of south-central Imperial County within this ecoregion subarea is nonattainment for the federal 24-hour PM2.5 standard. The remainder of the ecoregion subarea is unclassifiable/attainment for the federal PM2.5 standards (see Figure III.2-7).

As indicated above, all air basins within the Plan Area are designated nonattainment for the state ozone and PM10 standards. The westernmost portion of the Imperial Borrego Valley ecoregion subarea is designated nonattainment for the state PM2.5 standards. The remainder is designated Unclassified for the state PM2.5 standards (see Figure III.2-8).

III.2.5.3 Kingston and Funeral Mountains Ecoregion Subarea

The Kingston and Funeral Mountains ecoregion subarea lies within portions of the Great Basin Valleys and Mojave Desert Air Basins. Approximately 49% of the ecoregion subarea lies within the Great Basin Valleys Air Basin, and 51% of the ecoregion subarea lies within the Mojave Desert Air Basin (see Figure III.2-3). This ecoregion subarea is within the jurisdictional boundaries of the Great Basin Unified APCD and the Mojave Desert AQMD (see Figure III.2-2).

A very small portion of the Kingston and Funeral Mountains ecoregion subarea is designated severe-15 nonattainment under Subpart 2 for the 1997 federal 8-hour ozone standards (see Figure III.2-4). A very small portion of this ecoregion subarea is designated

severe-15 nonattainment for the 2008 federal 8-hour ozone standards (see Figure III.2-5). A portion of this ecoregion subarea is designated moderate nonattainment for the federal PM10 standards (see Figure III.2-6). This ecoregion subarea is unclassifiable/attainment for the federal PM2.5 standards (see Figure III.2-7).

As indicated above, all air basins within the Plan Area are designated nonattainment for the state ozone and PM10 standards. A small portion in the southwest of the Kingston and Funeral Mountains ecoregion subarea is designated nonattainment for the state PM2.5 standards. The remainder is either designated unclassified or attainment for the state PM2.5 standards (see Figure III.2-8).

III.2.5.4 Mojave and Silurian Valley Ecoregion Subarea

The Mojave and Silurian Valley ecoregion subarea lies entirely within the Mojave Desert Air Basin (see Figure III.2-3). This ecoregion subarea is within the jurisdictional boundaries of the Eastern Kern County APCD and the Mojave Desert AQMD (see Figure III.2-2).

Portions of the Mojave and Silurian Valley ecoregion subarea are designated moderate or severe-15 nonattainment under Subpart 2 for the 1997 federal 8-hour ozone standards (see Figure III.2-4). A very small portion of this ecoregion subarea is designated a marginal nonattainment area for the 2008 federal 8-hour ozone standards, and the southern portion of the ecoregion subarea is designated a severe-15 nonattainment area for the 2008 federal 8-hour ozone standards (see Figure III.2-5). Virtually all of this ecoregion subarea is designated moderate nonattainment for the federal PM10 standards (see Figure III.2-6). This ecoregion subarea is unclassifiable/attainment for the federal PM2.5 standards (see Figure III.2-7).

As indicated above, all air basins within the Plan Area are designated nonattainment for the state ozone and PM10 standards. Much of the southern portion of the Mojave and Silurian Valley ecoregion subarea is designated nonattainment for the state PM2.5 standards. The remainder is designated unclassified for the state PM2.5 standards (see Figure III.2-8). This ecoregion subarea also contains a portion of the Searles Valley Planning Area in San Bernardino County, which is designated nonattainment for the state H_2S standards (see Figure III.2-9).

III.2.5.5 Owens River Valley Ecoregion Subarea

The Owens River Valley ecoregion subarea lies entirely within the Great Basin Valleys Air Basin (see Figure III.2-3). This ecoregion subarea is within the jurisdictional boundaries of the Great Basin Unified APCD (see Figure III.2-2).

The Owens River Valley ecoregion subarea is unclassified/attainment for the 1997 and 2008 federal 8-hour ozone standards (see Figures III.2-4 and III.2-5). The majority of this ecoregion subarea is designated serious nonattainment for the federal PM10 standards. The relatively small remaining portions of the ecoregion subarea are designated either unclassified or attainment for the federal PM10 standards (see Figure III.2-6). This ecoregion subarea is unclassifiable/attainment for the federal PM2.5 standards (see Figure III.2-7).

As indicated above, all air basins within the Plan Area are designated nonattainment for the state ozone and PM10 standards. The Owens River Valley ecoregion subarea is designated attainment for the state PM2.5 standards (see Figure III.2-8).

III.2.5.6 Panamint Death Valley Ecoregion Subarea

The Panamint Death Valley ecoregion subarea lies within portions of the Great Basin Valleys and Mojave Desert Air Basins. Approximately 65% of the ecoregion subarea lies within the Great Basin Valleys Air Basin, and 35% of the ecoregion subarea lies within the Mojave Desert Air Basin (see Figure III.2-3). This ecoregion subarea is within the jurisdictional boundaries of the Great Basin Unified APCD, the Eastern Kern County APCD, and the Mojave Desert AQMD (see Figure III.2-2). This ecoregion subarea includes portions of the Death Valley National Park, a federal Class I area.

A small portion of the Panamint Death Valley ecoregion subarea is designated moderate nonattainment for the 1997 federal 8-hour ozone standards (see Figure III.2-4). Effective January 2013, the EPA determined that this portion (Eastern Kern County) attained the federal 1997 8-hour ozone standard. A very small portion of the ecoregion subarea is designated a marginal nonattainment area for the 2008 federal 8-hour ozone standards (see Figure III.2-5). The southern portion of this ecoregion subarea is designated moderate nonattainment for the federal PM10 standards (see Figure III.2-6). This ecoregion subarea is unclassifiable/attainment for the federal PM2.5 standards (see Figure III.2-7).

As indicated above, all air basins within the Plan Area are designated nonattainment for the state ozone and PM10 standards. The Panamint Death Valley ecoregion subarea is designated either unclassified or attainment for the state PM2.5 standards (see Figure III.2-8). This ecoregion subarea also contains a portion of the Searles Valley Planning Area in San Bernardino County, which is designated nonattainment for the state H_2S standards (see Figure III.2-9).

III.2.5.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea

The Pinto Lucerne Valley and Eastern Slopes ecoregion subarea lies within portions of the Mojave Desert and Salton Sea Air Basins. Essentially 100% of the ecoregion subarea lies within the Mojave Desert Air Basin, with less than 1% of the ecoregion subarea lying within

the Salton Sea Air Basin (see Figure III.2-3). This ecoregion subarea is within the jurisdictional boundaries of the Mojave Desert AQMD and the South Coast AQMD (see Figure III.2-2). Figure III.2-1 shows that this ecoregion subarea contains much of the Joshua Tree National Park, a federal Class I area.

Much of the Pinto Lucerne Valley and Eastern Slopes ecoregion subarea is designated severe-15 nonattainment under Subpart 2 for the 1997 federal 8-hour ozone standards. The remainder of the ecoregion subarea is unclassified/attainment for the 1997 federal 8-hour ozone standards (see Figure III.2-4). A majority of the ecoregion subarea is designated a severe-15 nonattainment area for the 2008 federal 8-hour ozone standards (see Figure III.2-5).

Much of this ecoregion subarea is designated moderate nonattainment for the federal PM10 standards. A small portion in the south of the ecoregion subarea is designated serious nonattainment for the federal PM10 standards. The remainder of the ecoregion subarea is unclassified for the federal PM10 standards (see Figure III.2-6). The Pinto Lucerne Valley and Eastern Slopes ecoregion subarea is unclassifiable/attainment for the federal PM2.5 standards (see Figure III.2-7).

As indicated above, all air basins within the Plan Area are designated nonattainment for the state ozone and PM10 standards. Much of the Pinto Lucerne Valley and Eastern Slopes ecoregion subarea is designated nonattainment for the state PM2.5 standards. The remainder is designated unclassified for the state PM2.5 standards (see Figure III.2-8).

III.2.5.8 Piute Valley and Sacramento Mountains Ecoregion Subarea

The Piute Valley and Sacramento Mountains ecoregion subarea lies entirely within the Mojave Desert Air Basin (see Figure III.2-3). This ecoregion subarea is within the jurisdictional boundaries of the Mojave Desert AQMD (see Figure III.2-2).

The Piute Valley and Sacramento Mountains ecoregion subarea is unclassified/attainment for the 1997 and 2008 federal 8-hour ozone standards (see Figures III.2-4 and III.2-5). The entire ecoregion subarea is designated moderate nonattainment for the federal PM10 standards (see Figure III.2-6). This ecoregion subarea is unclassifiable/attainment for the federal PM2.5 standards (see Figure III.2-7).

As indicated above, all air basins within the Plan Area are designated nonattainment for the state ozone and PM10 standards. The Piute Valley and Sacramento Mountains ecoregion subarea is designated unclassified for the state PM2.5 standards (see Figure III.2-8).

III.2.5.9 Providence and Bullion Mountains Ecoregion Subarea

The Providence and Bullion Mountains ecoregion subarea lies entirely within the Mojave Desert Air Basin (see Figure III.2-3). This ecoregion subarea is within the jurisdictional boundaries of the Mojave Desert AQMD (see Figure III.2-2). Figure III.2-1 shows that this ecoregion subarea contains a small portion of the Joshua Tree Wilderness.

A portion of the Providence and Bullion Mountains ecoregion subarea is designated severe-15 nonattainment under Subpart 2 for the 1997 federal 8-hour ozone standards (see Figure III.2-4). The western portion of the ecoregion subarea is designated a severe-15 nonattainment area for the 2008 federal 8-hour ozone standards (see Figure III.2-5). The entire ecoregion subarea is designated moderate nonattainment for the federal PM10 standards (see Figure III.2-6). This ecoregion subarea is unclassifiable/attainment for the federal PM2.5 standards (see Figure III.2-7).

As indicated above, all air basins within the Plan Area are designated nonattainment for the state ozone and PM10 standards. The western portion of the Providence and Bullion Mountains ecoregion subarea is designated nonattainment for the state PM2.5 standards. The remainder is designated unclassified for the state PM2.5 standards (see Figure III.2-8).

III.2.5.10 West Mojave and Eastern Slopes Ecoregion Subarea

The West Mojave and Eastern Slopes ecoregion subarea lies within portions of the Great Basin Valleys and Mojave Desert Air Basins. Approximately 3% of the ecoregion subarea lies within the Great Basin Valleys Air Basin, and 97% of the ecoregion subarea lies within the Mojave Desert Air Basin (see Figure III.2-3). This ecoregion subarea is within the jurisdictional boundaries of the Antelope Valley AQMD, the Great Basin Unified APCD, the Eastern Kern County APCD, and the Mojave Desert AQMD (see Figure III.2-2).

Much of the West Mojave and Eastern Slopes ecoregion subarea is designated either moderate or severe-15 nonattainment under Subpart 2 for the 1997 federal 8-hour ozone standards (see Figure III.2-4). Large areas of this ecoregion subarea are designated either marginal or severe-15 nonattainment for the 2008 federal 8-hour ozone standards (see Figure III.2-5). Portions of this ecoregion subarea are designated either moderate or serious nonattainment for the federal PM10 standards (see Figure III.2-6). This ecoregion subarea is unclassifiable/attainment for the federal PM2.5 standards (see Figure III.2-7).

As indicated above, all air basins within the Plan Area are designated nonattainment for the state ozone and PM10 standards. A portion in the southeast of the West Mojave and Eastern Slopes ecoregion subarea is designated nonattainment for the state PM2.5 standards. The remainder is designated either unclassified or attainment for the state PM2.5

standards (see Figure III.2-8). This ecoregion subarea also contains a portion of the Searles Valley Planning Area in San Bernardino County, which is designated nonattainment for the state H_2S standards (see Figure III.2-9).

III.2.6 Affected Environment for the Natural Community Conservation Plan

The affected environment for the Natural Community Conservation Plan (NCCP) is the same as that described above for the entire Plan Area. While there are Department of Defense (DOD) lands and tribal lands within the Plan boundaries, the Plan does not analyze effects on these lands so they are not included in the description of the affected environment.

III.2.7 Affected Environment for the General Conservation Plan

The affected environment for the General Conservation Plan (GCP) includes a subset of the lands covered by Plan-wide analysis and the NCCP. In addition to excluding DOD and tribal lands, the GCP lands exclude all other federal lands (e.g., BLM-administered public lands, national parks). The GCP acreage is less than that in the Plan Area. However, projects would still occur in each air basin, and the affected environment for air quality would be the same as described in Section III.2.5.

III.2.8 Baseline Emissions for the Plan Area

The Plan Area's 50 existing renewable energy projects listed in Appendix O create air pollutant emissions as a result of construction, operation and maintenance, and decommissioning activities. The reported construction-phase emissions from several of the existing renewable energy projects are listed as examples in Appendix R1.2-1.

III.2.9 Air Quality Outside of Plan Area

The Environment Outside of the Plan Area is very limited in size when compared to the Plan Area and is located within the same air districts as the Plan Area, with the addition of the Los Angeles area and the San Joaquin Valley. Aside from these areas for transmission, the affected environment for the Environment Outside the Plan Area is the same as described in Section III.2.5.

III.2.9.1 Transmission

In addition to the area within the DRECP, the federal and state regulatory environment presented in Sections III.2.1.1 and III.2.1.2 encompasses transmission corridors outside of the Plan Area.

III.2.9.1.1 San Diego Area

The Outside of Plan Area corridor in San Diego is within the San Diego Air Basin. Existing air quality conditions in this Out of Plan Area corridor would be the same as those presented in Section III.2.4.1.4, Table III.2-7, Ambient Air Quality Summary with Respect to Federal Standards – San Diego Air Basin and Section III.2.4.2.4, Table III.2-11, Ambient Air Quality Summary with Respect to State Standards – San Diego Air Basin.

III.2.9.1.2 Los Angeles Area

The Out of Plan Area corridor in Los Angeles is within the South Coast Air Basin (SoCAB), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SoCAB is bounded by the Pacific Ocean and Ventura County to the west, the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east, and San Diego County to the south. Table III.2-13 summarizes the 2013 attainment status of the SoCAB. As shown, the SoCAB is in attainment of all pollutant standards except for those related to ozone and particulate matter (both PM10 and PM2.5).

Table III.2-13
2013 Attainment Status for the South Coast Air Basin

Pollutant	Attainment Status	
	Federal	*State*
Ozone – 1 Hour	N/A	Nonattainment
Ozone – 8 Hour	Extreme Nonattainment	Nonattainment
CO	Attainment	Attainment
NO_2	Unclassifiable/Attainment	Attainment
SO_2	Unclassified/Attainment	Attainment
PM10	Attainment (Maintenance)	Nonattainment
PM2.5	Nonattainment	Nonattainment

Sources: California Air Resources Board, "Area Designations Maps/State and National." 2012. http://www.arb.ca.gov/desig/adm/adm.htm. U.S. Environmental Protection Agency. "Air Quality Maps." 2013. http://www.epa.gov/region9/air/maps/index.html.

III.2.9.1.3 North Palm Springs–Riverside

The Outside of Plan Area corridor in the North Palm Springs–Riverside Area is within the Mojave Desert Air Basin, Salton Sea Air Basin, and the SoCAB. Existing air quality conditions along this Out of Plan Area corridor would be the same as those presented in Section III.2.4.1.2 and Table III.2-5, Ambient Air Quality Summary with Respect to Federal Standards – Mojave Desert Air Basin; Section III.2.4.2.2 and Table III.2-9, Ambient Air Quality Summary with Respect to State Standards – Mojave Desert Air Basin; Section

III.2.4.1.3 and Table III.2-6, Ambient Air Quality Summary with Respect to Federal Standards – Salton Sea Air Basin; Section III.2.4.2.3 and Table III.2-10, Ambient Air Quality Summary with Respect to State Standards – Salton Sea Air Basin; and those presented above in Table III.2-13 for the SoCAB.

III.2.9.1.4 Central Valley

The Outside of Plan Area corridor in the Central Valley is within the Mojave Desert Air Basin and the San Joaquin Valley Air Basin. Existing air quality conditions along this Out of Plan Area corridor would be the same as those presented in Section III.2.4.1.2 and Table III.2-5, Ambient Air Quality Summary with Respect to Federal Standards – Mojave Desert Air Basin and Section III.2.4.2.2 and Table III.2-9, Ambient Air Quality Summary with Respect to State Standards – Mojave Desert Air Basin.

Table III.2-14 summarizes the 2013 attainment status of the San Joaquin Valley Air Basin. As shown, the San Joaquin Valley Air Basin is in attainment of all pollutant standards except for those related to ozone and particulate matter (both PM10 and PM2.5).

Table III.2-14
2013 Attainment Status for the San Joaquin Valley Air Basin

Pollutant	Attainment Status	
	Federal	*State*
Ozone – 1 Hour	N/A	Nonattainment
Ozone – 8 Hour	Extreme Nonattainment	Nonattainment
CO	Attainment	Attainment
NO_2	Unclassifiable/Attainment	Attainment
SO_2	Unclassified/Attainment	Attainment
PM10	Attainment (Maintenance)	Nonattainment
PM2.5	Nonattainment	Nonattainment

Sources: California Air Resources Board, "Area Designations Maps/State and National." 2012. http://www.arb.ca.gov/desig/adm/adm.htm. U.S. Environmental Protection Agency. "Air Quality Maps." 2013. http://www.epa.gov/region9/air/maps/index.html.

III.2.9.2 Bureau of Land Management Land Use Plan Amendment Decisions

The BLM Land Use Plan Amendment (LUPA) decisions affected environment for air quality includes BLM-administered lands under the BLM California Desert Conservation Area (CDCA) Plan. These areas are a subset of the larger area, so the affected environment for the Environment Outside the Plan Area is the same as described in Section III.2.9. These areas are located within portions of the Great Basin Valleys, Mojave Desert Salton Sea,

San Diego, and San Joaquin Valley Air Basins. Table III.2-15 summarizes the land areas within each of these Air Basins.

Table III.2-15
BLM LUPA Land Outside the Plan Area Air Basins (acres)

	Great Basin Valleys Air Basin	Mojave Desert Air Basin	Salton Sea Air Basin	San Diego Air Basin	San Joaquin Valley Air Basin	Total
BLM LUPA Land Outside Plan Area	671,611 (63%)	6,701 (1%)	372,937 (35%)	6,434 (1%)	**185 (<1%)**	**1,057,868**
Total Air Basin Area	**9,026,556**	**17,396,073**	**4,248,952**	**2,712,291**	**15,151,934**	**48,535,806**
Percentage of Total Air Basin	**7%**	**<1%**	**9%**	**<1%**	**<1%**	**2%**

Table III.2-14 shows a majority of these areas lie within the Great Basin Valleys and the Salton Sea Air Basins. Existing air quality conditions in these areas would be identical to those presented in Section III.2.4.1.1, Table III.2-4, Ambient Air Quality Summary with Respect to Federal Standards – Great Basin Valleys Air Basin; Section III.2.4.1.3, Table III.2-6, Ambient Air Quality Summary with Respect to Federal Standards – Salton Sea Air Basin; Section III.4.2.1, Table III.2-8, Ambient Air Quality Summary with Respect to State Standards – Great Basin Valleys Air Basin; and Section III.2.4.2.3, Table III.2-10, Ambient Air Quality Summary with Respect to State Standards – Salton Sea Air Basin.

INTENTIONALLY LEFT BLANK

III.3 METEOROLOGY AND CLIMATE CHANGE

Climate varies significantly across the Plan Area and is influenced by variations in elevation, latitude, topographic features, moisture source, and proximity to water bodies. The meteorological elements of temperature and wind and hydrological components of precipitation, snowpack, and runoff affect atmospheric circulation patterns at both micro- and macro-scales. The climate of an area, in turn, influences the composition and resilience of biological resources because of effects from important ecological processes. Most notably, climate affects hydrologic patterns, the volume and pollutant/sediment load of runoff, soil stability and moisture, dust and erosion, and the timing, length, and intensity of the fire cycle.

Several decades of evidence, summarized by the Intergovernmental Panel on Climate Change (IPCC), show that changes in the climate are occurring and that human influence has been a dominant cause. The IPCC Fifth Assessment Report (IPCC 2013) states:

> *Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased.*
>
> *Human influence on the climate system is clear. This is evident from the increasing greenhouse gas concentrations in the atmosphere, positive radiative forcing, observed warming, and understanding of the climate system.*
>
> *Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes. This evidence for human influence has grown since (the Fourth Assessment Report ([2007]) AR4. It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.*

In other words, the IPCC has concluded that the world's climate system is warming. Examples of other changes include substantial increases in precipitation in some regions of the world and decreases in other regions. Within California, atmospheric concentrations of greenhouse gases (GHG) carbon dioxide and methane have increased consistent with global trends (California Environmental Protection Agency [EPA] 2013). Changes in natural physical systems (e.g., shifts in the ranges of plant and animal species, conditions more favorable to the spread of invasive species and of some diseases, and changes in the amount and timing of water availability) are also affected by regional climate change (Karl et al. 2009, pp. 27, 79–88; California EPA 2013).

Analyses presented by the IPCC Fifth Assessment Report (IPCC 2013) conclude that it is extremely likely that more than half of the observed increase in global average surface temperature from 1951 to 2010 were caused by the anthropogenic (human-caused) increase in GHG concentrations and other human sources.

Scientists use multiple climate models–including both natural processes and variability and different scenarios of potential levels and timing of GHG emissions–to evaluate the causes of changes already observed and project future changes in temperature and other climate conditions (Ganguly et al. 2009, pp. 11555, 15558; Prinn et al. 2013). All combinations of models and emissions scenarios yield similar projections of average global warming until about 2030. Although projections of the magnitude and rate of warming differ after about 2030, the overall trajectory of all the projections is one of increased global warming through the end of this century, even for projections based on scenarios that assume GHG emissions will stabilize or decline. There is therefore strong scientific support for projections that warming will continue through the twenty-first century and that the magnitude and rate of change will be influenced substantially by the extent of GHG emissions (Ganguly et al. 2009, pp. 15555–15558; Prinn et al. 2013).

Biological systems are strongly influenced by climate, particularly temperature and precipitation. Shifts in the habitat elevation or latitude, changes in the timing of growth stages, changes in abundance and community composition, and increased vulnerability to wildfires or pathogens are examples of biological responses influenced by warming temperatures (California EPA 2013).

The changes in climate may have direct or indirect effects on species. These effects may be positive, neutral, or negative and may change over time, depending on the species and other relevant considerations, such as interactions of climate with other variables like habitat fragmentation (Franco et al. 2006; Galbraith et al. 2010; Chen et al. 2011). In addition to evaluating individual species, scientists are evaluating possible climate change-related impacts to, and responses of, ecological systems, habitat conditions, and groups of species. These studies acknowledge uncertainty (Deutsch et al. 2008; Berg et al. 2009; Euskirchen et al. 2009; McKechnie and Wolf 2009; Sinervo et al. 2010; Beaumont et al. 2011; McKelvey et al. 2011; Rogers and Schindler 2011).

Vulnerability refers to the degree to which a species (or system) is susceptible to, and unable to cope with, adverse effects of stressors stemming from climate change, including climate variability and extremes. Vulnerability is a function of the type, magnitude, and rate of climate change and variation to which a species is exposed, its physiological sensitivities, and its adaptive capacity (Glick et al. 2011, pp. 19–22). There is no single method for conducting vulnerability analyses that applies to all situations (Glick et al. 2011, p. 3). The

DRECP lead agencies used expert judgment and appropriate analytical approaches to weigh relevant information, including uncertainty, when considering aspects of climate change.

Adaptation to climate change is part of the conservation strategy of the DRECP, while renewable energy furthers the goal of mitigating climate change by reducing GHG emissions. This is consistent with The President's Climate Action Plan to cut carbon pollution and prepare for the impacts of climate change (Executive Office of the President 2013). Cutting carbon pollution relates to the president's goal to double renewable electricity generation by 2020 through accelerating clean energy permitting and expanding and modernizing the electric transmission grid. The plan also states that the federal government will consume 20% of its electricity from renewable sources by 2020. Preparing for the impacts of climate change also includes conserving land and water resources by implementing climate-adaptation strategies that promote resilience in fish and wildlife populations, forests, and other plant communities (Executive Office of the President 2013).

The Third U.S. National Climate Assessment, released on May 6, 2014, provides the most authoritative and comprehensive source of scientific information to date about climate-change impacts across all U.S. regions and on critical sectors of the economy. For the Southwest U.S., including the DRECP Plan Area, the National Climate Assessment emphasizes the risks to scares water resources and states:

> *Climate changes pose challenges for an already parched region that is expected to get hotter and, in its southern half, significantly drier. Increased heat and changes to rain and snowpack will send ripple effects throughout the region's critical agriculture sector, affecting the lives and economies of 56 million people – a population that is expected to increase 68 percent by 2050, to 94 million. Severe and sustained drought will stress water sources, already over-utilized in many areas, forcing increasing competition among farmers, energy producers, urban dwellers, and plant and animal life for the region's most precious resource.*

The 2009 California Climate Adaptation Strategy recommends that state agencies meet projected population growth and increased energy demand with greater energy conservation and renewable energy (California Natural Resource Agency 2009). Energy planners must also consider the effects of climate change on electricity transmission. Key transmission corridors are especially vulnerable to wildfires. In addition to the issues of reduced thermal efficiency in fossil-fueled power plants, reduced hydroelectric generation, line losses at substations, and increasing electricity demand during the hottest periods, transmission lines themselves lose 7% to 8% of their load in high temperatures, when the lines typically carry higher loads to meet peak consumer demand (California Climate Change Center 2012).

This chapter addresses both the regulatory framework pertaining to climate change and the existing climate conditions and affected environment of the Plan Area.

Appendix P includes a discussion of climate change science as it applies to the Plan Area. The Climate Change report in Appendix P provides information to support the long-term adaptive management strategy of the DRECP landscape. Climate change adaptation strategies are in the scope of assessment of Biological Resources (Chapter III.7).

Appendix R1.3 includes a table that summarizes the baseline GHG emissions as reported for existing renewable energy projects in the Plan Area and meteorological data giving monthly climate summaries for locations within the Plan Area.

III.3.1 Regulatory Setting

III.3.1.1 Federal

III.3.1.1.1 The President's Climate Action Plan

A synopsis of The President's Climate Action Plan, as it relates to the DRECP, is described in the following sections.

III.3.1.1.2 Greenhouse Gas Reporting Program Implementation

On October 30, 2009, the EPA published a rule for mandatory reporting of GHG from sources emitting 25,000 or more metric tons of carbon dioxide equivalent (CO_2e) per year. The regulation at Title 40 Code of Federal Regulations, Part 98, is referred to as the Greenhouse Gas Reporting Program. This rule applies to direct GHG emitters, fossil fuel suppliers, industrial gas suppliers, and facilities that inject carbon dioxide underground for sequestration or other purposes. The Greenhouse Gases Reporting Program Implementation Fact Sheet (EPA 2013) states that 41 industrial categories are required to report, an increase from the 29 categories required to report in 2010. This reporting program applies to electricity generation sources that burn fossil fuels, except portable equipment and emergency power generators.

III.3.1.1.3 National Fish, Wildlife, and Plants Climate Adaptation Strategy

The National Fish, Wildlife, and Plants Climate Adaptation Strategy outlines the first joint effort of three levels of government (federal, state, and tribal) with primary authority and responsibility for the living resources within the United States. The intent of the strategy is to identify how these resources can become more resilient, adapt to, and survive a warming climate (U.S. Fish and Wildlife Service 2012). The seven major goals of the strategy are to: (1) conserve and connect habitat, (2) manage species and habitats, (3)

enhance management capacity, (4) support adaptive management, (5) increase knowledge and information, (6) increase awareness and motivate action, and (7) reduce nonclimate stressors (U.S. Fish and Wildlife Service 2012). Implementation of the National Fish, Wildlife, and Plants Climate Adaptation Strategy was initiated in November 2013 with the first meeting of a Joint Implementation Working Group.

III.3.1.2 State

III.3.1.2.1 Executive Order S-3-05—Statewide Greenhouse Gas Emission Targets

Executive Order S-3-05, signed by Governor Arnold Schwarzenegger on June 1, 2005, established the following GHG emission reduction targets for the State of California:

1. By 2010, reduce GHG emissions to 2000 levels.
2. By 2020, reduce GHG emissions to 1990 levels.
3. By 2050, reduce GHG emissions to 80% below 1990 levels.

This Executive Order directs the secretary of California EPA to oversee the efforts made to reach these targets and to prepare biannual reports on the progress made. Meeting the targets will mitigate the impacts on California from global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The Executive Order also directs the secretary of California EPA to prepare and report on mitigation and adaptation plans to combat the impacts.

III.3.1.2.2 Assembly Bill 32—California Global Warming Solutions Act

Assembly Bill 32 (Nuñez), the "California Global Warming Solutions Act of 2006," requires the California Air Resources Board (CARB) to adopt rules and regulations to reduce GHG emissions to 1990 levels by 2020. The CARB is required to publish a list of discrete GHG emission reduction measures.

III.3.1.2.3 2009 California Climate Adaptation Strategy

The 2009 California Climate Adaptation Strategy report summarizes the science on climate change impacts in the state to assess vulnerability and outline possible solutions that could be implemented within and across state agencies to promote resiliency (California Natural Resources Agency 2009). The adaptation strategy incorporates existing state-specific climate science and impacts research led by the California Energy Commission's Energy Research and Development program. Its framework includes the AB 32 Climate Change Scoping Plan (CARB 2008). A key recommendation within the adaptation strategy is to

meet projected population growth and increased energy demand with greater energy conservation and more renewable energy generation.

III.3.1.2.4 California Air Resources Board – Mandatory Reporting of GHGs Rule

Starting on January 1, 2010, large emitters of heat-trapping gases began collecting GHG data and reporting their annual emissions to CARB. The first reports were generally due in 2011. This mandatory reporting applies to facilities emitting 10,000 metric ton (MT) CO_2e or more per year. Facilities that emit more than 25,000 $MTCO_2e$ per year must verify their emissions through a third-party verifier. The reporting rule does not apply to electricity generating facilities powered solely by nuclear, hydroelectric, wind, or solar energy, unless on-site stationary combustion emissions equal or exceed 10,000 $MTCO_2e$.

III.3.1.2.5 Renewables Portfolio Standard

The Renewables Portfolio Standard promotes diversification of the state's electricity supply. It was originally enacted in 2002 with the goal to achieve a 20% renewable energy mix by 2017. In 2008, the goal date was accelerated to 2010. Subsequent directives, including Executive Orders S-14-08 and S-21-09, similarly increased the targets to a goal of 33% by 2020. Signed in April 2011, Senate Bill X1-2 expressly applies the 33% Renewables Portfolio Standard requirement by December 31, 2020, to all retail sellers, including publicly owned utilities. The purpose of the Renewables Portfolio Standard is to economically achieve the 33% renewable energy mix statewide in a manner consistent with the Assembly Bill 32 Climate Change Scoping Plan (CARB 2008). Renewable energy includes wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas.

III.3.2 Climate Change Trends for the State and Plan Area

III.3.2.1 Understanding Climate Change

Climate change refers to changes in the long-term average of climate, generally based on 30 years. This averaging period minimizes the influence of natural variability and facilitates the analysis of long-term trends (California EPA 2013). Climate change differs from climate variability, which refers to short-term deviations from the average climate. Throughout geologic history, the earth's climate has changed (experienced periodic warming and cooling cycles) as a result of natural factors, but current science demonstrates that climate change is now occurring as a result of high concentrations of GHGs in the earth's atmosphere due to human activities (IPCC 2013).

Climate is affected by human factors (such as changes in land cover and emissions of certain pollutants), natural factors (such as solar radiation and volcanic eruptions), and its own internal dynamics (California EPA 2013).

Table III.3-1 summarizes the most common GHGs. Each GHG has both a variable atmospheric lifetime and a global warming potential (GWP). The atmospheric lifetime of the GHG is the average time the molecule stays stable in the atmosphere. Most GHGs stay in the atmosphere hundreds or thousands of years. The potential of a gas to trap heat and warm the atmosphere is measured by its GWP. Specifically, GWP is defined as "the cumulative radiative forcing—both direct and indirect effects—integrated over a period of time from the emission of a unit mass of gas relative to some reference gas" (EPA 2010).

Table III.3-1
Global Warming Potentials and Atmospheric Lifetimes (Years)

GHG	Atmospheric Lifetime	100-year GWP	20-year GWP	500-year GWP
Carbon dioxide (CO_2)	50–200	1	1	1
Methane*	12 ±3	21	56	6.5
Nitrous oxide	120	310	280	170
Sulfur hexafluoride	3,200	23,900	16,300	34,900

Source: EPA 2010, Annex 6.

* The methane GWP includes the direct effects and those indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

The reference gas for establishing GWP is carbon dioxide, which—as shown in Table III.3-1—has a GWP of 1. As an example, methane has a shorter atmospheric lifetime than carbon dioxide, but a greater 100-year GWP. The 100-year GWP values are used for calculating CO_2e values, which are the measurement units for complying with reporting requirements (CARB 2014).

The main GHGs listed in Table III.3-1 are CO_2, methane, and nitrous oxide, which are driven by anthropogenic increases in fossil fuel use, fertilizer use, and land use and land use change, in particular, agriculture (CARB 2014). Hydrofluorocarbons are synthetic, human-made chemicals used as substitutes for ozone-depleting chlorofluorocarbons used in air conditioners and as refrigerants (CARB 2014). Perfluorocarbons such as tetrafluoromethane are used primarily in aluminum production and semiconductor manufacture. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment.

III.3.2.2 Statewide Greenhouse Gas Inventory

The CARB performs inventories of statewide GHG emissions. These inventories are divided into the following broad categories of economic activity, or sources of emissions: agriculture, commercial, electricity generation, high GWP emitters, industrial, recycling and waste, residential, and transportation. Emissions are quantified in millions of $MTCO_2e$. Table III.3-2 shows the estimated statewide GHG emissions for 2011.

Table III.3-2
2011 California GHG Inventory

Sector	2011 Emissions in Millions of $MTCO_2E$ (% total)[1]
Agriculture	32.2 (7%)
Commercial	15.6 (3.5%)
Electricity Generation	86.6 (19.3%)
High GWP Emitters	15.2 (3.4%)
Industrial	93.2 (20.8%)
Recycling and Waste	7.0 (1.6%)
Residential	29.9 (6.7%)
Transportation	168.4 (37.6%)
Total	**448.1**

Source: CARB 2013.
[1] Percentages may not total 100 due to rounding.

III.3.2.3 Climate Change Trends for the State

The California Climate Change Center's summary report "Our Changing Climate 2012" includes the following findings in California:

- The state's electricity system is more vulnerable than previously understood.
- The Sacramento-San Joaquin Delta is subsiding, putting levees at growing risk.
- Wind and waves, in tandem with faster-rising seas, will worsen coastal flooding.
- Animals and plants need connected "migration corridors" to allow them to move to more suitable habitats to avoid serious impacts.
- Native freshwater fish are particularly threatened by climate change.
- Minority and low-income communities face the greatest risk from climate change.
- Local governments face many barriers in adapting to climate change. (California Climate Change Center 2012)

Temperatures in California will rise significantly during this century as a result of the GHGs humans release into the atmosphere; this conclusion holds regardless of the climate model used to project future warming (California Climate Change Center 2012).

Cal-Adapt is a Web-based climate adaptation planning tool that synthesizes data from research labs in California so users can identify potential climate change risks in specific geographic areas in the state. It projects temperature increases in California for both low-GHG and high-GHG emissions scenarios. These increases are the projected difference in temperature between a baseline period (1961–1990) and an end-of-the-century period (2070–2090) (Cal-Adapt 2013). Under the low-emissions scenario, temperatures within California would increase up to 4°F. Under the high-emissions scenario, temperatures within California would increase up to 7.2°F.

Cal-Adapt calculates wildfire impacts for low- and high-GHG emissions scenarios. There are parts of the state where a 10-fold increase is expected in burn areas under high- and low-emissions scenarios. Multiple counties contain a range between three- and ten-fold increases in burn areas by 2085 under both the low- and high-emissions scenarios (Cal-Adapt 2013).

Cal-Adapt calculates California snow-pack projections in April as snow water equivalency under low- and high-GHG emissions scenarios. The projected difference in the snow water equivalency compares the baseline period (1961-1990) with an end-of the-century period (2070-2090). The tendency for a lower spring snowpack grows over the decades of the twenty-first century, reducing the Sierra Nevada spring snowpack by as much as 70% to 90% by 2100 with diminishing snowpack in Southern California ranges (Cal-Adapt 2013).

III.3.2.4 Climate Change Trends for the Plan Area

Appendix R1.3-2 contains a summary of meteorological data for the 10 ecoregion subareas in the two desert regions. A range of climate scenarios for temperature and precipitation in the Plan Area appears with modeled results presented in Appendix P, Climate Change. Most data for climate change predictions are still at a continental scale. "Downscaling" refers to a reinterpretation of the data to make predictions for smaller geographic areas, such as regional or subregional areas. For the DRECP analysis, climate change data have been scaled down to an ecoregion subarea scale. Climate change trends for the Plan Area are summarized in this section.

The range of possible scenarios allows land managers to understand the level of uncertainty in the projections and to implement adaptive management that has the flexibility to adjust to changing conditions. Temperature increases and variable precipitation trends appear in the results.

The part of the Plan Area exposed to an average annual maximum temperature of 40°C is currently small but would expand to at least 33% of the DRECP by 2100. Mean annual minimum temperatures would also substantially increase (see Figure 10 in Appendix P). Temperature change projections in the Mojave and Sonoran deserts indicate mean annual, monthly median, and minimum and maximum temperature increases over 2°C in both the Mojave and Sonoran deserts. Projections also show a change in the distribution of precipitation in the Plan Area, but the direction of change differs between climate models. For example, one model projects a decrease in monsoon season or summer rain in the northeastern corner of the Plan Area, while another projects an increase in this same area (see Figure 11 in Appendix P). Trends for snowpack generally show decreases under scenarios for both drier and wetter weather, although one model projects slightly higher snowpack at higher elevations of the Sierra Nevada range through the twenty-first century.

An additional trend at the state and Plan Area levels will be vegetation shift due to climate change, based on the capacity of species to migrate and keep up with geographic changes. The identification of species migration corridors has important implications for land-use planning within the Plan Area. Appendix P, Climate Change, presents modeled results for coarse-scale vegetation changes in the Plan Area, including a 2% to 3% increase in the broad desert scrub category in the Sonoran Desert and a 4% to 6% increase in desert scrub in the Mojave Desert by the end of the century. Appendix P indicates that scenarios of both increases and decreases in rainfall can increase fire risks (frequency and/or intensity) because build-up of fuels may occur under increased precipitation and drying out of fuels may occur under decreased precipitation with year-to-year variability

III.3.3 Meteorology and Climate—Greenhouse Gas Baseline Analysis for the Plan Area

The lead agencies determined that October 15, 2013, is the baseline date (see Chapter III.1, Introduction, Definition of Environmental Baseline). This date includes 50 existing renewable energy projects in the Plan Area (see Appendix O). These projects are not all included in the 2011 CARB GHG inventory (CARB 2013) because some became operational or were under construction during 2012 and 2013. The 2011 CARB GHG inventory covers all of the sectors mentioned in Section III.3.2, Statewide GHG Inventory: agriculture, commercial, electricity generation, high GWP emitters, industrial, recycling and waste, residential, and transportation.

The 2011 GHG inventory includes emissions from all anthropogenic sources within California's boundaries. These emissions are then used to determine GHG emissions trends (California EPA 2013). The 2011 statewide GHG emissions are 448 $MMTCO_2e$. This baseline incorporates broad GHG-producing sectors throughout California and serves as a point of comparison for all of the alternatives analyzed for the Plan Area.

The baseline GHG emission rates from electricity use in California are available from the EPA for 2009. The national Emissions & Generation Resource Integrated Database includes electricity generated within the state and electricity imported from outside California. CARB gives an estimate of 830 pounds CO_2e per megawatt hour (CARB 2010) for the GHG emission reduction achieved by adding wind and solar generation on the premise that non-baseload generation would be needed to integrate the renewable energy. Table III.3-3 shows the baseline GHG emissions from electricity use and the non-baseload emission rates that can be used to estimate GHG emissions reductions from decreases in electricity use (EPA 2012; CARB 2010).

Table III.3-3
California Existing GHG Emission Rates from Electricity Use

GHG	Data Year (Reference)	Annual Total Electricity Emissions (pound/ megawatt hour)	Non-Baseload Electricity Emissions (pound/ megawatt hour)
Carbon dioxide (CO_2)	2009 (EPA 2012)	658.68	993.89
Methane	2009 (EPA 2012)	0.02894	0.03352
Nitrous oxide	2009 (EPA 2012)	0.00617	0.00407
Carbon dioxide equivalent	2008 (CARB 2010)	—	830

Source: EPA 2012, Emissions & Generation Resource Integrated Database 2012; CARB 2010.

III.3.3.1 GHG Emissions from Existing Renewable Energy Projects

The Plan Area's 50 existing renewable energy projects listed in Appendix O create GHG emissions as a result of construction, operation and maintenance, and decommissioning activities. Project-specific GHG emissions estimates from several of the existing renewable energy projects in the Plan Area are listed as examples in Appendix R1.3-1. Each of these projects was analyzed in separate, recent environmental documents, under different methodologies for direct emissions. Project-specific estimates normally exclude external or life-cycle emissions such as those from raw materials and manufacturing, which vary little from project to project. The examples in Appendix R1.3-1. show the existing projects causing combined construction emissions, amortized over the life of each project, plus operational and maintenance emissions at a rate ranging from about 1 to 39 $MTCO_2e$ per year for each megawatt of built capacity, at an average of less than 10 $MTCO_2e$ per year. Based on these estimates, the construction, operation and maintenance, and decommissioning activities for the 50 existing renewable energy projects in the Plan Area, with a combined generation capacity of 6,250 megawatts, may emit about 62,500 $MTCO_2e$ per year. Projected carbon sequestration losses from the loss of vegetation and land use conversion from the individual projects were shown to be either minimal or were not

quantified in the analyses. Losses in the capacity of carbon sequestration on the part of soil microbes affected by the land use conversion were not taken into account.

III.3.3.2 Net GHG Emissions from Existing Renewable Energy Projects

Existing renewable energy projects that are operational produce electricity that offsets or displaces GHG emissions that would otherwise be emitted by fossil fuel-fired power plants. The successful operation of the 50 existing projects having a combined generation capacity of 6,250 megawatts, as listed in Appendix O, would indirectly offset or displace the operation of other electricity generators and their associated GHG emissions. The estimated electric power production for these existing renewable energy projects in the Plan Area would be 15.8 million megawatt hours per year, based on data in Appendix O. At this level of power production, and an offset factor of 830 pounds of CO_2e per megawatt hour (CARB 2010), the electricity provided by the existing operational projects in the Plan Area displaces about 5.9 million $MTCO_2e$ each year that would otherwise be emitted by fossil fuel-fired power plants, thereby providing net reductions in GHG emissions for the electricity generating sector.

III.3.4 Meteorology and Climate—Greenhouse Gas Baseline for Outside the Plan Area

III.3.4.1 Transmission Outside the Plan Area

The environmental setting presented in Section III.3.2, Climate Change Trends, encompasses all transmission out of Plan Area corridors as well, due to the scale of meteorological and climate change phenomena.

III.3.4.2 Bureau of Land Management Land Use Plan Amendment Decisions Outside the Plan Area

The environmental setting presented in Section III.3.2, Climate Change Trends, also includes the Bureau of Land Management Land Use Plan Amendment lands outside the Plan Area.

III.4 GEOLOGY AND SOILS

This section describes federal and state regulation of soils and geology, including regional topography, geology, geologic processes, seismicity, and soils, specifically as it relates to the Desert Renewable Energy Conservation Plan (DRECP or Plan). Appendix R1.4 includes 10 maps and 3 tables that support this chapter. The maps illustrate soil textures within the Plan Area's ecoregion subareas, and the tables present data, expressed in acres, for the surficial geology and soil textures in the Plan Area, as well as for soil textures within Development Focus Areas (DFAs) for each Plan alternative.

III.4.1 Regulatory Setting

III.4.1.1 Federal

Federal Land Policy and Management Act

The Federal Land Policy and Management Act (FLPMA) establishes policy and goals for the Bureau of Land Management's (BLM) administration of public lands. The intent of FLPMA is to protect and administer public lands within a multiple-use, sustained-yield program that maintains environmental quality. Its greatest areas of protection are scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archaeological resources. Under FLPMA, BLM is further charged with protecting life and safety from natural hazards.

Clean Water Act

The Clean Water Act (CWA) requires states to set standards to protect water quality by requiring the all construction sites larger than one acre obtain a National Pollution Discharge Elimination System (NPDES) permit prepared through a site-specific Storm Water Pollution Prevention Plan (SWPPP). Stormwater runoff from construction may contain large loads of dissolved and undissolved organic matter, suspended sediment, and pollutant chemicals in construction site soils – all of which can affect water quality. An SWPPP must include a site description (including a map that identifies sources of stormwater discharges on the site), anticipated drainage patterns after major grading, and areas where major structural and nonstructural measures will be employed including surface waters, wetlands, sediment deposition areas, and discharge points to surface waters.

III.4.1.2 State

California Land Conservation Act of 1965

The California Land Conservation Act of 1965, commonly known as the Williamson Act, was enacted to preserve California's prime agricultural lands from urbanization. The Williamson Act has been amended several times to allow its use for purposes other than pro-

tection of prime agricultural lands; local governments may now enter into contracts with private landowners to dedicate specific parcels of land to open space.

Alquist-Priolo Earthquake Fault Zoning Act of 1972, Public Resources Code (PRC) Section 2621-2630

This act's main purpose is to prevent construction of buildings used for human occupancy on the surface trace of active faults. Before issuing building permits, cities and counties must require a geologic investigation to ensure that proposed buildings are not constructed across active faults. Proposed building sites must be evaluated by a licensed geologist.

California Building Code 2010 Edition

The California Building Code (2010 Edition) contains a series of construction project standards: design and construction, including grading and erosion control. The 2010 edition is based on the 2009 International Building Code (excluding Appendix Chapter 1) published by the International Code Council, with the addition of more extensive seismic structural standards. The California Building Code (Chapter 16) contains definitions of the seismic sources and procedures used to calculate seismic forces on structures.

III.4.1.3 County Plans

Renewable energy facilities constructed within the Plan Area would be required to comply with all county building codes and acquire all needed building and grading permits. The following General Plan elements pertain to geology and soils issues within the Plan Area.

Imperial County General Plan—Seismic and Public Safety Element

The Seismic and Public Safety Element of the Imperial County General Plan contains goals and policies to minimize the risks from natural and human-made hazards, including seismic and geological hazards and flood hazards (Imperial County 1993).

Inyo County General Plan—Safety Element

The Safety Element of the Inyo County General Plan establishes policies and programs to minimize risks to the community from seismic, geologic, flood, and fire hazards (Inyo County 2001).

Kern County General Plan—Safety Element

The Safety Element of the Kern County General Plan contains goals and policies to minimize risks from geologic, fire, flood safety hazard areas, and hazardous materials (Kern County 2009).

Los Angeles County General Plan—Safety Element

The Safety Element of the Los Angeles County Draft General Plan contains goals and policies to minimize risks from seismic and geotechnical hazards, flood and inundation hazards, and fire hazards. The purpose of the Safety Element is to reduce the potential risk of death, injuries, and economic damage from natural and human-caused hazards (Los Angeles County 2012).

Riverside County General Plan—Safety Element

The primary objective of the Riverside County General Plan Safety Element is to reduce death, injuries, property damage, and economic and social impact from hazards. The Safety Element (1) develops a framework by which safety considerations are introduced into the land use planning process; (2) facilitates the identification and mitigation of hazards for new development, strengthening existing codes, project review, and permitting processes; (3) presents policies directed at identifying and reducing hazards in existing development; and (4) strengthens earthquake, flood, inundation, and wild land fire preparedness planning and post-disaster reconstruction policies (Riverside County 2008).

San Bernardino County General Plan—Safety Element

The purpose of the Safety Element of the San Bernardino County General Plan is to reduce the potential risk of death, injuries, property damage, and economic and social dislocation from fires, floods, earthquakes, landslides, and other hazards. The Safety Element addresses risks associated with (1) seismically induced surface rupture, ground shaking, ground failure, seiche, and dam failure; (2) slope instability leading to mudslides and landslides; (3) subsidence, liquefaction, and other seismic hazards identified on seismic hazard maps; (4) other known geologic hazards; (5) flooding; and (6) wild land and urban fires (San Bernardino County 2011).

San Diego County General Plan—Safety Element

The purpose of the San Diego County General Plan Safety Element is to include safety considerations in planning and decision-making processes by establishing future development policies that minimize the risk of personal injury, loss of life, property damage, and environmental damage from both natural and human-caused hazards. These hazards include wildfires, geological and seismic hazards, flooding, hazardous materials, law enforcement actions, and airport hazards (San Diego County 2011).

III.4.2 Geology and Soils within the Plan Area

Surficial geology, geologic processes, and soil conditions and types could all either affect or be affected by renewable energy facility siting in the Plan Area. The majority of the Plan Area covers the Mojave and Sonoran desert regions of southeastern California, with areas both within and east of the Sierra Nevada mountain range. The Mojave and Sonoran deserts are made up of short, scattered mountain ranges within large desert plains. These inter-mountain regions include playas and basins that form terminal dry lakes, alluvial fans, major dune systems, and broad washes called bajadas.

III.4.2.1 Geomorphology and Surficial Geology

Geomorphology concerns the landforms and relief patterns that make up the earth's surface. Small portions of the Plan Area extend into the mountains west and northwest, but outside of, the Plan Area: the San Bernardino and Western Transverse mountain ranges (west of the Plan Area)and the Sierra Nevada mountain range (northwest of the Plan Area). Overall, about 97% of the Plan Area is in the Mojave and Sonoran desert regions of California. 71% of the Plan Area is in the Mojave Desert, and 26% is in the Sonoran Desert. This discussion covers the geomorphology of both desert regions in the Plan Area.

The Mojave Desert is bounded on the west by the Sierra Nevada and on the south by the San Bernardino, Little San Bernardino, and San Gabriel mountain ranges. Within the Plan Area, the Sonoran Desert is bounded on the west by the Peninsular Ranges and on the east by the Colorado River. The large mountain ranges create the rain-shadow effect that in turn creates these arid desert regions. The geomorphology of the Mojave and Sonoran desert regions is dominated by short, isolated mountain ranges within desert plains. Major land-forms include mountains, plateaus, alluvial fans, playas, basins, and dunes. Basins and ranges are common in the Plan Area.

There are at least 65 named mountain ranges in the Plan Area. Many of these mountain ranges have alluvial fans, which are the fan-shaped landforms that form around the base of mountains (Harden 2004). Where large alluvial fans join together, a broad gentle alluvial plain is formed, creating a geomorphic feature known as a bajada. The intermountain areas are characterized by numerous playas and basins, which form dry lakes known commonly as playas.

There are 23 dry lakes within the Plan Area (CEC 2012). These dry lakebeds, which provide wildlife habitat and sand sources for sand transport corridors and dune systems, include:

- Rosamond Dry Lake
- Silurian Lake
- Cuddeback Lake
- Bristol Lake
- Melville Lake
- Coyote Lake
- Danby Lake
- Silver Dry Lake
- Palen Lake
- Ford Dry Lake
- China Lake
- Bagdad Lake
- Harper Dry Lake
- Twentynine Palms
- Dale Lake
- Searles Lake
- Cronese Lake
- Kelso Wash/Dry Lake
- Cadiz Lake
- Leach Lake
- Mesquite Lake
- Lavic Lake
- Bicycle Lake

There are approximately 16 named sand dune systems in the Plan Area (CEC 2012). Among the largest are the Algodones Dunes, located in the Sonoran Desert south of the Salton Sea in Imperial County. The public uses the Kelso Dunes and the Mojave National Preserve for hiking and recreation. The 16 major dune systems in the Plan Area include:

- Olancha Dunes
- Death Valley (Mesquite) Dunes
- Dumont Dunes
- Cadiz Dunes
- Algodones Dunes/East Mesa
- Danby Dunes
- Means Dunes
- Rice Valley Dunes
- Panamint Dunes
- Ibex-Saratoga Dunes
- Kelso Dunes
- Palen Sand Dunes
- Chuckwalla Valley Dunes
- Little Dumont Dunes
- Ballarat Dunes
- Salton Sea Dunes

Surficial geology concerns the unconsolidated geological surface materials that lie above bedrock; it is an important factor in soil formation and in the type and distribution of local desert vegetation. Figure III.4-1, Surficial Geology, presents the surficial geologic units within the Plan Area. Table R1.4-1, Surficial Geology in the Plan

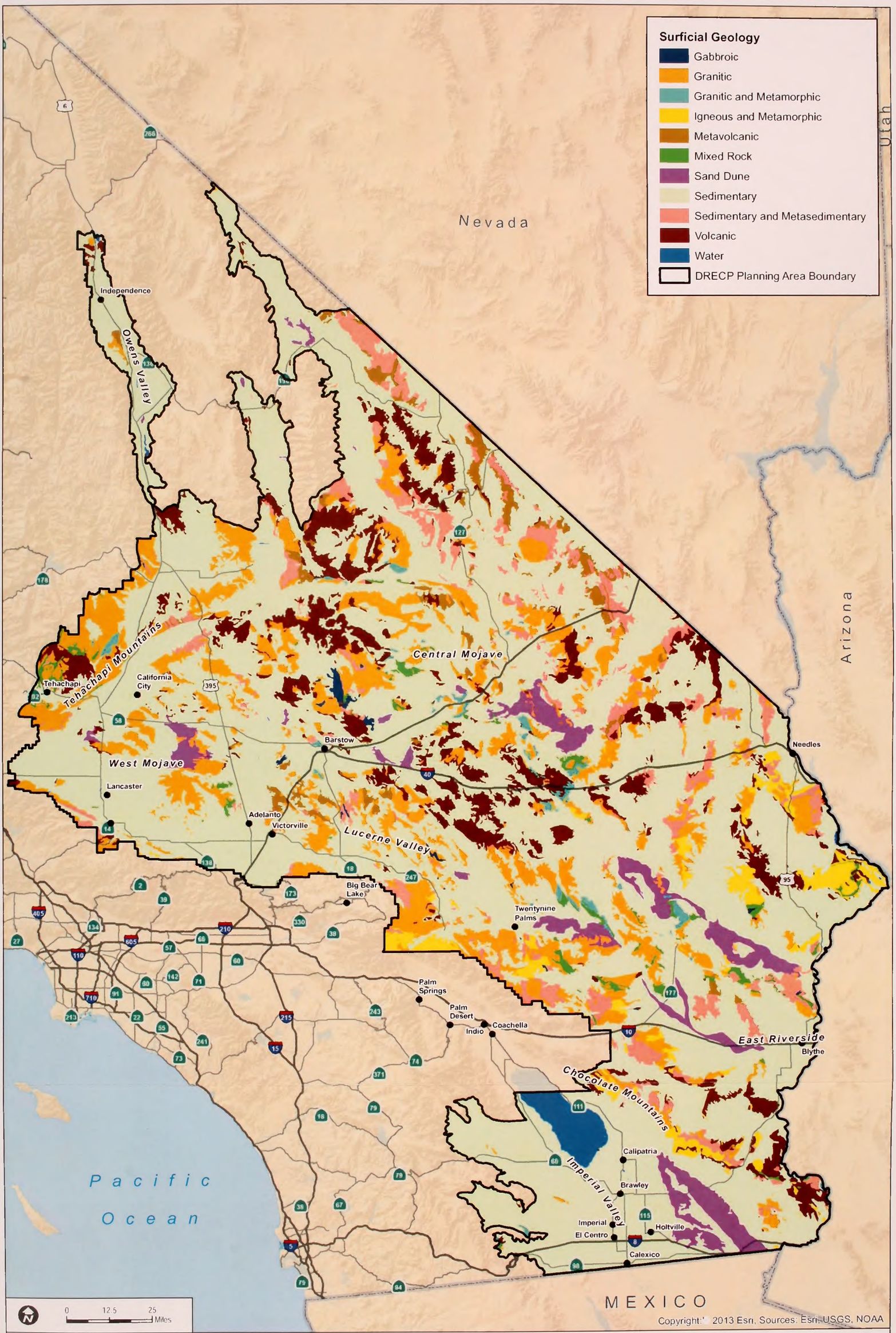
Area (in Appendix R1), defines the acreage of the geologic formations across the Plan Area. The table lists 39 separate geologic units, but most would not affect development of renewable energy projects. For this analysis, the most prevalent and important geologic units are described below:

1. The majority of the ground surface of the Plan Area (over 60%) is composed of alluvium, which is unconsolidated sediment deposited by flowing water in streams or sheets. Subsequent environmental processes have variably consolidated these sediments. Alluvium, shown as sedimentary rock type in Figure III.4-1, Surficial Geology, is more common in the flatter regions of the Plan Area, and less common in more mountainous areas.
2. Young volcanic rocks (where volcanoes were active within the last 2.5 million years) make up about 143,000 acres (6% of the Plan Area). These relatively young volcanic features include:
    a. Cima, Amboy-Pisgah, and Turtle Mountain features in San Bernardino County.
    b. Pinto Basin–Salton Creek in Riverside County.
    c. Obsidian Buttes in Imperial County (Harden 2004).
3. Sand dunes make up relatively small portions of the Plan Area but still account for substantial acreage. Sand dune deposits comprise about 3% (approximately 707,000 acres) of the Plan Area.
4. Landslide deposits within the Plan Area are small. The Plan Area includes just over 4,000 acres (less than 0.02%) of landslide materials.

III.4.2.1.1 Physiography and Geologic Setting

III.4.2.1.1.1 Cadiz Valley and Chocolate Mountain Ecoregion Subarea

The Cadiz Valley and Chocolate Mountains ecoregion subarea occupies the northeastern portion of the Colorado Desert and extends from the Colorado River in the east to the Eagle Mountains, Coxcomb Mountains, and Bullion Mountains in the west, and from the Chocolate Mountains and Orocopia Mountains in the south to the Whipple Mountains, Vidal Valley, Turtle Mountains, Cadiz Valley, and Old Woman Mountains in the north.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CA Geological Survey (2011)

FIGURE III.4-1

Surficial Geology

INTENTIONALLY LEFT BLANK

The geologic structure in this ecoregion subarea is complex and reflects the regional juxtaposition of large-scale tectonic forces from the transform faulting and rifting to the south along the San Andreas Fault Zone and the crustal extension to the north in the Basin and Range province. The southern mountain ranges (e.g., Chocolate Mountains and Chuckwalla Mountains), therefore, have a general northwest–southeast alignment, parallel to the San Andreas Fault Zone, while the northern mountains (e.g., Iron Mountains and McCoy Mountains) trend more north–south in keeping with the general structural trend of the Basin and Range province. The oldest rocks in the ecoregion subarea are Precambrian metamorphic rocks in the core of the Chocolate Mountains, Chuckwalla Mountains, and Big Maria Mountains.

These rocks were intruded into and altered by Mesozoic plutonic rocks. In the Chocolate Mountains, surprisingly young (~23 Ma [Ma denotes *million years before the present*]) plutonic rocks have also contributed to alteration of the older rocks in this area. Extensive sequences of volcanic rocks of roughly the same age occur in the eastern Chocolate Mountains, Palo Verde Mountains, and Black Hills. There are also younger Miocene fanglomerates and Pliocene nonmarine sedimentary rocks in these southern mountain ranges, as well as in the southeastern Whipple Mountains on the north side of Vidal Valley. The geology of the Palen Mountains and McCoy Mountains is unusual for the California desert region since it contains a thick sequence of late Mesozoic (~120 to 65 Ma) nonmarine sedimentary rocks (the McCoy Formation). The broad valleys in this ecoregion subarea have been substantially filled with Quaternary (~2.5 Ma to recent) fluvial, alluvial fan, and lacustrine deposits from adjacent mountain ranges. Several periods of deposition, uplift, and erosion are recorded in these deposits, which can be differentiated between older Quaternary alluvial fan sequences and those still being formed today. As with other desert areas, there are several dry playa lakes in the valley floors.

III.4.2.1.1.2 Imperial Borrego Valley Ecoregion Subarea

The Imperial Borrego Valley ecoregion subarea encompasses the majority of the Salton Basin between the Chocolate Mountains and San Andreas Fault Zone in the east and the eastern flanks of the Peninsular Ranges in the west. The Salton Sea forms a substantial part of the northern portion of this ecoregion subarea, while the Anza-Borrego Desert State Park and the Ocotillo Wells State Vehicular Recreation Park encompass large areas of the western portion.

The central portion of this ecoregion subarea is characterized by low-relief topography associated with the Pleistocene to Holocene (~37 to 0.5 thousand years before the present) Lake Cahuilla (see below). In the east lie the Algodones Dune field; in the west the Borrego Badlands, Carrizo and Vallecito Badlands, and Yuha Basin are separated by the Vallecito and Coyote Mountains, respectively. These western valleys contain deformed sequences of

late Miocene (~6 Ma) through middle Pleistocene (~0.7 Ma) marine to nonmarine sedimentary rocks. These rocks record the opening and flooding of the proto-Gulf of California during the late Miocene (~7 to 6 Ma), the initiation and westward progradation of the ancestral Colorado River Delta during the Pliocene (~4.5 to 2.5 Ma), and the cyclical formation and desiccation of large perennial lakes formed by periodic changes in the flow of the Colorado River during the Pleistocene and Holocene (~2.5 Ma to 0.4 thousand years before the present). Today, as much as 2,000 square miles of the ecoregion subarea lie below sea level, protected from marine waters of the modern Gulf of California by the sediment "dam" formed by the Colorado River Delta.

III.4.2.1.1.3 Kingston and Funeral Mountain Ecoregion Subarea

The Kingston and Funeral Mountains ecoregion subarea encompasses the northeastern portion of the Plan Area and is a western extension of the Basin and Range province into California. It extends from the California-Nevada border in the east to Amargosa Mountains, Silurian Valley, and Old Dad Mountains in the west, and from Ivanpah Valley and the Kelso Dune Field in the south to the Grapevine Mountains and Funeral Mountains in the north. As a western extension of the Basin and Range province, this ecoregion subarea is characterized by a series of northwest-trending mountain ranges and intervening valleys, each bounded by frontal faults that have uplifted the ranges and downdropped the basins. This general geologic structure also continues into the adjacent Panamint and Death Valley ecoregion subarea and the Mojave and Silurian Valley ecoregion subarea.

The geology of the mountain ranges in this ecoregion subarea is somewhat more complex than in other parts of the Plan Area. This area includes very ancient, marine sedimentary rock units of Proterozoic (~>1000 Ma) and Paleozoic (~540 to 250 Ma) age that have not been subjected to the intense metamorphic conditions that have altered similar aged rocks farther west in the Mojave Desert. The geologic history of the valley areas, however, is similar to that of other areas in the Mojave Desert and primarily reflects internal drainage systems with streams and alluvial fans flowing off uplands to fill adjacent basins. As is often the case, these internal drainage systems culminated during the Pleistocene, forming local pluvial lakes that in some cases became interconnected, especially along the Amargosa River drainage.

III.4.2.1.1.4 Mojave and Silurian Valley Ecoregion Subarea

The Mojave and Silurian Valley ecoregion subarea encompasses much of the central portion of the Mojave Desert from Silurian Valley and Soda Valley in the east to the Rand Mountains, Gravel Hills, and Calico Mountains in the west, and from the Manix Basin in the south to Pilot Knob Valley, the Granite Mountains, and the Avawatz Mountains in the

north. Topographically, the region is similar to the adjacent Kingston and Funeral Mountains ecoregion subarea.

The ecoregion subarea is characterized by a series of generally northwest-trending mountain ranges and intervening valleys, each bounded by frontal faults that have uplifted the ranges and downdropped the basins. However, east–west trending mountain ranges to the north (e.g., Rand Mountains, Granite Mountains, and Avawatz Mountains) cut across this general northwest structural grain and are largely the result of tectonic forces from the Garlock Fault.

III.4.2.1.1.5 Owens River Valley Ecoregion Subarea

The Owens River Valley ecoregion subarea is the smallest ecoregion subarea in the Plan Area and is confined to the floor of Owens Valley between Little Lake on the south and Tinemaha Reservoir on the north. Owens River traverses the valley from north to south and flows from its headwaters in the Sierra Nevada Mountains and Inyo Mountains into Owens Lake. Since 1913 a majority of this flow has been diverted to the Los Angeles Basin via the Los Angeles Aqueduct. Owens Valley lies in the western part of the Basin and Range province and is a downdropped basin between the White and Inyo Mountains to the east and the Sierra Nevada Mountains to the west.

The Owens Valley floor itself is relatively flat for much of its length and width, but is punctuated in places by resistant igneous rocks of both plutonic and volcanic origin. At the Alabama Hills in the center of the valley, the Central Owens Valley Fault has offset Cretaceous-age plutonic rocks of the Sierra Nevada Batholith and older Mesozoic metasedimentary rocks. Farther north in the valley are a series of well-preserved Pleistocene cinder cones and volcanic flows on either side of the valley floor. Owens Lake occupies the southern portion of Owens Valley and is a mere shadow of its Pleistocene, pluvial self. Younger and older Pleistocene lacustrine deposits in this area attest to the former size of Lake Owens, which at it maximum inundation was over 300 feet deep. There are extensive accumulations of Pleistocene and Holocene volcanic rocks in the Coso Range east of Owens Valley.

III.4.2.1.1.6 Panamint Death Valley Ecoregion Subarea

The Panamint Death Valley ecoregion subarea encompasses the western corner of the Basin and Range province and consists of a north–south trending series of down-dropped basins (e.g., Death Valley and Panamint Valley) separated by block-faulted mountain ranges (e.g., the Amargosa Range, Panamint Range, and Argus Mountains). For the most part, the uplifted mountain ranges are excluded from this ecoregion subarea, which primarily includes only the elongate valley floors of Death Valley, Panamint Valley, and Searles Valley.

The major uplands regions are to the south and include the Owls Head Mountains, Quail Mountains, Slate Range, Spangler Hills, and El Paso Mountains.

The general east–west trending Garlock Fault controls the topography along the southern boundary of this ecoregion subarea. The oldest rocks are erosional remnants of Precambrian metamorphic rocks in the southern Panamint Range. There are limited amounts of Paleozoic marine sedimentary rocks on the northern part of the Slate Range and in the eastern portion of the El Paso Mountains. Plutonic igneous rocks of Mesozoic age are widely exposed in the Owls Head Mountains, the Slate Range, the southern Argus Range, and the Spangler Hills. There are localized remnants of Mesozoic roof pendants, altered by intrusion of the younger Mesozoic plutonic rocks, in the southern Panamint Range. Cenozoic volcanic rocks are concentrated over a broad area in the Quail Mountains and the southern Panamint Range, while Cenozoic sedimentary rocks have a more patchy distribution, primarily along the Garlock Fault. Paleocene-age rocks of the Goler Formation are confined to the El Paso Mountains.

Much younger Quaternary-age sediments fill the broad basins of Searles Valley, Panamint Valley, and Death Valley, and there are several dry lake beds in the floors of these valleys today.

III.4.2.1.1.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea

The Pinto Lucerne Valley and Eastern Slopes ecoregion subarea encompasses the southern portion of the Mojave Desert from the Bullion Mountains in the east to the Mojave River in the west, and from the San Bernardino and Cottonwood Mountains in the south to the Newberry Mountains and Stoddard Valley in the north. The northern part of this ecoregion subarea conforms geologically with other parts of the western Mojave Desert, so consists of a series of northwest-trending mountain ranges bounded by parallel striking faults. In contrast, the southern portion of this ecoregion subarea has more in common with the transverse ranges that begin in the Santa Ynez Mountains in Santa Barbara County and extend eastward as a series of east–west trending mountain ranges that terminate in the Little San Bernardino Mountains, Pinto Mountains, and Eagle Mountains.

The geology of these transverse-trending mountains is dominated by Mesozoic plutonic rocks and well-metamorphosed Precambrian rocks. The mountain ranges in the north also expose large masses of Mesozoic plutonic rocks. The smaller mountain ranges and buried peaks at the north end of Apple Valley and Lucerne Valley are notable exceptions; they expose thick sequences of resistant, Mesozoic volcanic rocks. There are similar rocks in the Ord Mountains and Rodman Mountains. There are limited Cenozoic sedimentary rocks in this ecoregion subarea in isolated fault blocks of the Newberry Mountains and along the northern flanks of Stoddard Valley.

Like other ecoregion subareas, there are extensive fluvial and lacustrine deposits of Pleistocene age form deep valley fills in the many large and small valleys. There are especially thick valley fills in Apple Valley, Lucerne Valley, Johnson Valley, and, in the south, Pinto Basin.

III.4.2.1.1.8 Piute Valley and Sacramento Mountains Ecoregion Subarea

The Piute Valley and Sacramento Mountains ecoregion subarea spans the approximate boundary between the Colorado Desert and Mojave Desert. It extends from the Colorado River and Piute Valley in the east to the Turtle Mountains, Old Woman Mountains, and Piute Mountains in the west, and from the Whipple Mountains and Chemehuevi Valley in the south to the Dead Mountains and Piute Valley in the north. Topographically, this ecoregion subarea contains extensive aprons of active alluvial fans that extend from widely separated uplands into the adjacent valleys. The Sacramento Mountains trend northwest–southeast across the ecoregion subarea and create a prominent divide between Chemehuevi Valley to the south and Piute Valley to the north.

The oldest rocks are in the core of the Sacramento Mountains and in the Chemehuevi Mountains to the southeast, and consist of Precambrian metamorphic and igneous rocks that are in close fault contact with much younger Cenozoic-age volcanic rocks. There is an outlier of Mesozoic plutonic rocks in the northern part of the Turtle Mountains. Sedimentary rocks are largely confined to the broad and extensive alluvial fan and fluvial sequences that have been filling low-lying areas of this region since at least early Pleistocene time.

III.4.2.1.1.9 Providence and Bullion Mountains Ecoregion Subarea

The Providence and Bullion Mountains ecoregion subarea encompasses the southeastern portion of the Mojave Desert. It extends from Lanfair Valley and the Old Woman Mountains in the east to the Cady Mountains and Bullion Mountains in the west, and from the Cadiz Valley and Sheep Hole Mountains in the south to the New York Mountains, Providence Mountains, and Bristol Mountains in the north. Topographically, the ecoregion subarea is similar to other areas in the eastern Mojave Desert and contains a series of generally northwest-trending mountain ranges and intervening valleys bounded by frontal faults that have uplifted the ranges and down-dropped the basins. However, there are both several north–south trending mountain ranges (e.g., the Providence Mountains and Old Woman Mountains) and a succession of broad alluvium-filled valleys (e.g., Lanfair Valley, Clipper Valley, Bristol Valley, and Cadiz Valley) in this ecoregion subarea.

There are crystalline basement rocks of Precambrian age, intruded by Mesozoic plutonic rocks, in the cores of the eastern mountain ranges including the Old Woman Mountains, Piute Mountains, Clipper Mountains, and Granite Mountains; mountain ranges in the west

are primarily composed of extensive accumulations of Cenozoic volcanic rocks. Examples of these volcanic rocks include Miocene lava flows preserved in the northern Bullion Mountains, as well as very young (late Pleistocene; ~25 ka) lava flows and cinder cones (e.g., Pisgah Crater) in the Lavic Lake Volcanic Field south of Newberry Springs. Cenozoic sedimentary rocks occur sporadically in this ecoregion subarea, with notable exposures in the Cady Mountains. Large playa lake beds (e.g., Bristol Lake and Dale Lake) cover several of the valley floors and represent Ice Age relicts of once-larger Pleistocene pluvial lakes.

III.4.2.1.1.10 West Mojave and Eastern Slopes Ecoregion Subarea

The West Mojave and Eastern Slopes ecoregion subarea encompasses the western portion of the Mojave Desert from the Mojave River west through El Mirage Valley and the Antelope Valley to nearly Quails Lake, and from the San Andreas Fault Zone along the eastern flanks of the San Gabriel Mountains north to the southeastern slopes of the southernmost Sierra Nevada Mountains. It further extends north into Indian Wells Valley around the western end of the El Paso Mountains. The main, western Mojave Desert portion of this ecoregion subarea is characterized by broad expanses of low relief alluvial plains punctuated by isolated buttes, ridges, and hills. These upland areas are mostly composed of non-fossil-bearing Mesozoic-age plutonic igneous rocks (e.g., Antelope Buttes, Rosamond Hill, Soledad Mountain, Bissell Hills, Castle Butte, Shadow Mountains, and Kramer Hills) that represent the weathered "peaks" of a deeply eroded and ancient landscape that has mostly been buried beneath the younger Pleistocene basin filling alluvial and lacustrine deposits.

A series of northwest trending faults has deformed portions of the ancient basement plutonic rocks. To a varying extent, these faults are also responsible for the spotty preservation of a series of middle and late Cenozoic nonmarine sedimentary rock units in areas like Rosamond Hill and the Bissell Hills (Fiss Fanglomerate and Gem Hill Formation), Castle Butte (Tropico Group), and Kramer Hills (Tropico Group). Local faulting is also responsible for the uplift and dissection of Pleistocene older alluvial fan deposits adjacent to the Mojave River drainage, as well as in several inter-basin valleys like Hinkley Valley, Harper Valley, and Fremont Valley. Larger-scale faulting related to the San Andreas Fault Zone and the Garlock Fault is associated with the uplift and dissection of Pleistocene alluvial fans along the flanks of the San Gabriel, Tehachapi, and southern Sierra Nevada mountains.

There are localized playa lake deposits (e.g., Rosamond Dry Lake and Rogers Dry Lake) in low-lying areas away from the mountains; they are Pleistocene and Holocene remnants of much larger pluvial lakes (e.g., Lake Thompson) that characterized the region during the Pleistocene glacial periods. The Mojave River is a prominent element in the eastern portion of this ecoregion subarea and is responsible for depositing a relatively thick sequence of Pleistocene-through-Holocene-age fluvial sediments.

III.4.2.1.2 Geologic Processes

There are three fundamental geomorphic processes that shape the surficial geology of desert systems and the transportation and deposition of substrates (Miller et al. 2009):

1. Aeolian processes describe wind transported materials.
2. Fluvial, alluvial, and lacustrine processes describe water-transported materials.
3. Mass-wasting processes describe gravity-transported materials.

Surficial deposits vary according to several factors related to these depositional processes including particle size, cohesiveness, bulk density, lateral and vertical heterogeneity, and the degree of sorting (Miller et al. 2009). Descriptions of these geomorphic processes and their corresponding deposits follow.

In the Mojave Desert, alluvial fans are formed through flowing water that pushes debris from mountain foothills (Miller et al. 2009). Sand dunes and sheets are formed through aeolian, or wind processes. Playas and valley washes are formed through fluvial, lacustrine, and aeolian processes. Hillslope materials are formed through mass-wasting processes, and wetland deposits are formed through fluvial and aeolian processes. Surficial deposits vary according to several factors including particle size, cohesiveness, bulk density, lateral and vertical heterogeneity, and the degree of sorting (Miller et al. 2009).

Aeolian Processes

The erosion, transport, and deposition of wind-blown sediments shape the desert landscape, affecting desert pavement, sand sheets, and dune systems (BLM 2002[a]; Miller et al. 2009).

Aeolian systems are determined by the interactions of three main factors: sediment supply, sediment availability (i.e., its ability to be transported by the wind), and wind transport capacity (Kocurek and Lancaster 1999). Miller (Miller et al. 2009) describes aeolian-driven soil formation as a process that "proceeds by progressive infiltration of fine-grained dust, chemical deposition, and weathering within sediment deposits." This process results in soil layering that strongly affects the water permeability and moisture-holding capacities of desert soils. This layering, or soil profile, is more pronounced in older soils. One by-product of aeolian processes is desert pavement, which is described in more detail in Section III.4.2.2.4.

Sand dune systems form where winds are consistently strong enough to lift just above the ground and push (or "saltate") fine sand grains across the dune surface, especially where there is little or no vegetation to stabilize the loose soil. Sandy alluvium in dry washes and

alluvial fans are sources for these materials, and strong winds generally transport the sands to areas at the mountain front where decreasing winds deposit sand (Harden 2004). Except in high-force winds, wind does not typically suspend and transport sand high into the air. The sand forming the Algodones Dunes in the southeastern portion of the Plan Area, for example, originated in the sandy delta of the Colorado River. The dunes currently extend about 43 miles from the southeast portion of the Salton Sea to the U.S.–Mexico border and can be over 300 feet high (Harden 2004).

Fluvial, Alluvial, and Lacustrine Processes

Water exerts a stronger but more intermittent force on desert surface sediments than wind. The majority of the surficial geology of the Plan Area is alluvium (shown as sedimentary in Figure III.4-1, Surficial Geology), which is from flowing water that, over geological time, carries materials from the mountains and deposits them at their base, creating broad alluvial fans of unconsolidated sediment.

Desert fluvial processes generally relate to the drainage system of distant hill slopes and channels. These processes are generally short-lived, severe events related to thunderstorms in the distant hills, which can create fast-moving debris flows and cause flash flooding on alluvial fans. Generally, the size of an alluvial fan is proportional to the size of its drainage network upslope (Harden 2004).

Lacustrine processes are most prominent in desert dry lakes or playas, which are generally low spots in drainage basins that capture fine grain sediments and surface water. These low points may also be influenced by shallow or emergent groundwater. Such areas are technically base-level plains in desert drainage basins (Cooke and Warren 1973). Playas are large flat areas dominated by fine-grained sediments (e.g., clay and evaporite minerals). These fine-grained sediments make playas relatively impermeable. Surface water is removed by infiltration and evaporation. Groundwater is removed by evaporation, evapotranspiration (or evaporation and transpiration by vegetation), and by groundwater outflow into neighboring basins if fluid pathways exist. During wet periods surface water accumulates, causing sedimentation onto playa or lakebed surfaces. Overall, the hydrologic characteristics of a playa are affected by climate, basin floor conditions, soil and vegetation, and water salinity, which affects evaporation rates.

Mass-Wasting Processes

Mass wasting refers to the downslope movement, under the direct influence of gravity, of rock, rock and mineral fragments, and soil (Nelson 2011). Mass-wasting processes include creep, slides, and debris flows. Slides are the sudden downslope movements of rock and sediment. Debris flows are dense, fluid mixtures of rock, sediment, and water.

While mass wasting in the Plan Area occurs primarily as rock falls and rockslides on steep slopes, larger events could also potentially occur. Large events are often connected to either existing faults or new seismic activity. Intense monsoonal rains and earthquakes are the primary causes of rock falls and rockslides on steep, mountain slopes in the Plan Area. Creep, on the other hand, is a slow, continuous downslope movement primarily caused by freeze/thaw or wet/dry cycles (California Department of Conservation 2007); creep therefore occurs only in small areas at high elevations.

III.4.2.2 Soils

Soil type can directly affect the site suitability for renewable energy projects. Soil types also can be indicators for the potential for valuable habitat, as explained in Chapter III.7 (Biological Resources), but this chapter focuses on the non-biological values. Table R1-4-2 (in Appendix R1) presents a complete list of the acreage for various soil textures for the Plan Area. Table III.4-1 summarizes soil types within the Plan Area.

Table III.4-1
Soil Types and Textures within the Plan Area

Soil Type	Definition	Textures	Acres
Clay	A stiff, sticky (when wet) fine-grained soil, often forming an impermeable layer in a soil profile.	Clay, silty clay, clay loam	589,000
Sand	A loose granular soil resulting from the erosion of siliceous and other rocks and usually containing only small amounts of organic matter	Fine to coarse sand; cobbly or gravelly sand; Loamy sand	8,340,000
Loam	A fertile soil of clay, silt, and sand containing organic components formed by decomposition of microorganisms and plant biomass	Fine, gravelly, sandy, or silty	8,457,000
Bedrock	Solid rock on the surface or underlying loose deposits such as soil or alluvium.	Unweathered bedrock	4,190,000
		Weathered bedrock	822,000
Unknown	n/a	Not Mapped	188,000
		Total	**22,585,000**

Source: California Department of Conservation 2010.
Note: The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Soil types and textures for each ecoregion subarea are presented in Tables R1.4-3 through R1.4-12, in Appendix R1.

In addition to soil types, soil conditions are important characteristics of the desert environment and geologic setting of the Plan Area. They include desert pavement, erosive

(e.g., carbonate, high-silt) soils, corrosive soils (saline), and expansive (high-clay) soils. Each is described in the following paragraphs. Biotic soil crusts are addressed in Section III.4.2.2.4 Biological Soil Crusts, as well as in Section III.7.3.3 Soil Biota.

III.4.2.2.1 Soils Prone to Erosion

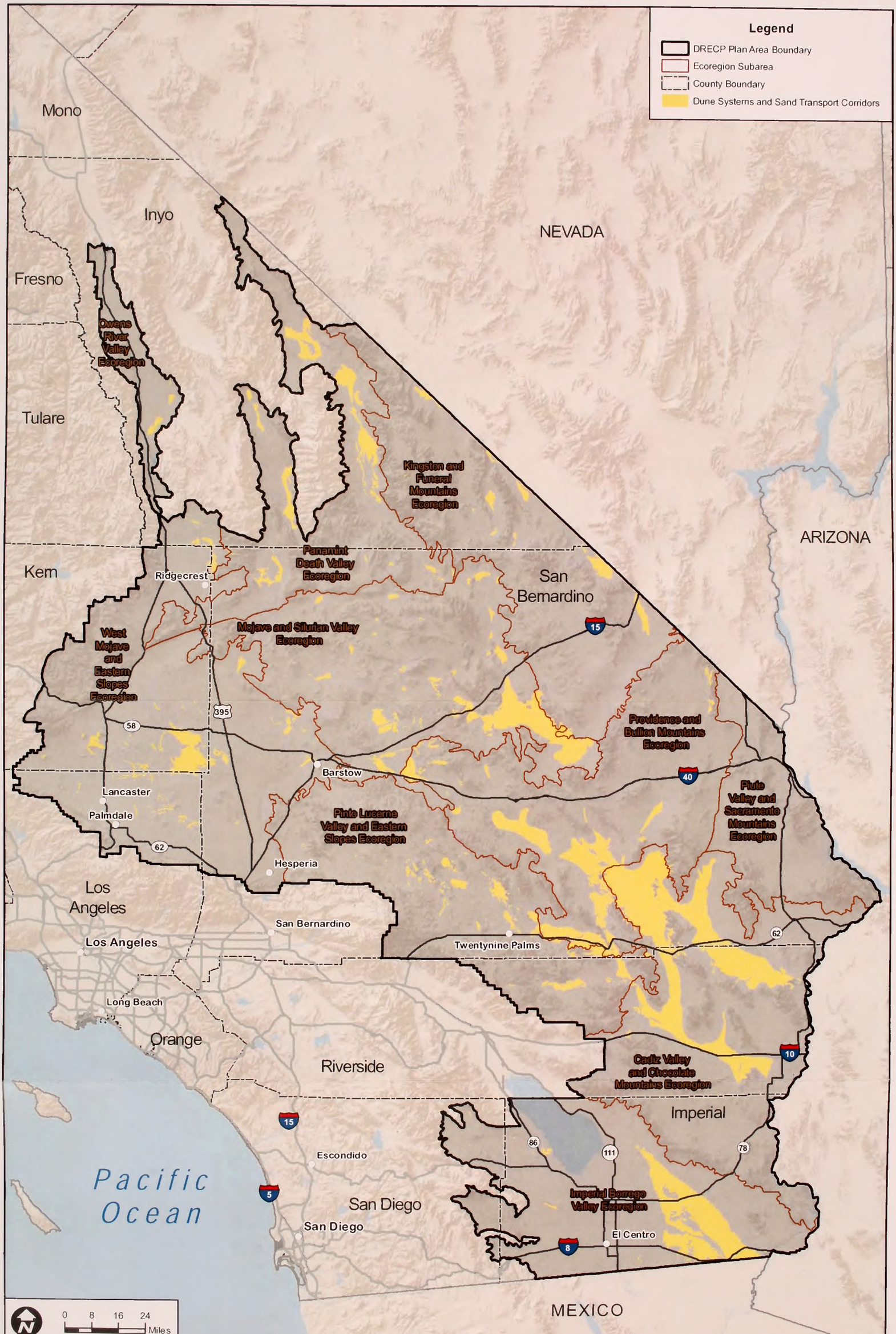
Wind and water erosion are the primary generating forces for surface features in desert climates. Surface features prone to erosion from wind and water include steep slopes, playas, bajadas, washes, alluvial fans, and sand dunes. Erosion occurs when wind or water propels fine-grained soil components. Multiple factors influence the quantity of soil loss from wind and water erosion including soil texture, soil structure, vegetation cover, permeability, land use, and topography.

Soil texture is the primary factor in determining soil's erodibility. Soil textures dominated by silt or very fine sand are the most highly erodible by wind because soil particles are not bound together by electrochemical bonds as they are in clays; they are therefore easily detached (not too heavy). Aggregated soils that are more closely bound together with high amounts of soil organic matter are less erodible since their more cohesive soil particles are larger and can better resist erosional action from wind and water. Highly permeable soils are the most resistant to erosion since a greater proportion of rainfall seeps into them, thereby diminishing runoff and promoting soil compaction. The amount of vegetation cover and land use also influences a soil's susceptibility to wind or water erosion.

III.4.2.2.1.1 Sand Transport Corridors

The Chuckwalla Valley of the Mojave Desert, located along Interstate 10 between Blythe and Desert Center, is an example of a sand transport corridor. This valley supports sand dune habitats that depend upon delivery of fine sand from aeolian and fluvial processes. These sand dunes have an active layer of mobile sand, and exist in a state of dynamic equilibrium as they continuously lose sand downwind and gain sand upwind. Dunes move within sand transport corridors. At Palen Dunes in the Chuckwalla Valley, dune migration rates were as high as 50 meters per year, totaling 1,373 meters in 27 years (1984-2011), predominantly in a southern direction (Potter and Li 2014). The overall size of active dune fields increased significantly from 1984-2011.

Active sand dunes, such as Palen Dunes, Dumont Dunes, Algodones Dunes, and Kelso Dunes, also provide important habitat for species (e.g., the Mojave fringe-toed lizard) that rely on a regular supply of wind-blown sand. Based on land-cover mapping of North American warm desert dunes and sand flats, there are about 1,781,000 acres of sand transport corridors and dune systems within the Plan Area (Data Basin 2014[a]). See Figure III.4-2 Dune Systems and Sand Transport Corridors within the Plan Area, for the distribution of sand transport corridors.



Sources: ESRI (2014); CEC (2013); DATABASIN (2014b)

FIGURE III.4-2

Dune Systems and Sand Transport Corridors within the Plan Area

INTENTIONALLY LEFT BLANK

III.4.2.2.2 Corrosive Soils (Saline, Gypsic, and Sodic Soil)

Depending on its chemical composition, soil may be corrosive to buried steel, concrete, other construction materials, and on-site equipment. Soil corrosion can potentially create geologic hazards that could undermine the long-term integrity of renewable energy project infrastructure. Soil resistivity is the ability of soil to allow electrons to move through it. A low resistivity means that a soil is a good electron conductor and thus a stronger corrosive agent. A soil with resistivity between 2,000 to 5,000 Ohm-centimeters is considered "moderately corrosive" to ungalvanized steel, while soils with a resistivity between 5,000 to 10,000 Ohm-centimeters are considered "mildly corrosive." The predominant soil type in the Plan Area is alluvium, which has a resistivity ranging from 1,428 to 10,000 Ohm-centimeters (USDOT 2009).

Corrosive desert soils have high contents of chloride, sodium, or sulfate minerals. Soils with high amounts of sulfate minerals, such as gypsum, are harmful to concrete, particularly when soil moisture is acidic (low pH). High chloride concentrations from saline minerals can corrode metals. Many of the soils that develop on or near playas contain unusually high quantities of saline and sodic minerals, which are left behind from stormwater evaporation. Certain playas (e.g., Searles Lake) produce commercially valuable corrosive minerals such as trona, which is corrosive to steel.

Vegetation in the desert is specifically adapted to its soil characteristics. Playas are fairly devoid of vegetation due to their highly alkaline soils. Wetland habitats known as "North American warm desert alkaline scrub and herb playa and wet flat" are widespread in the Plan Area. The presence of playas indicates potentially corrosive soil. Using these two vegetation types to help identify likely corrosive soils, there is an estimated 509,000 acres of potentially corrosive soil within the Plan Area (Data Basin 2014b). See Figure III.4-3, Potentially Corrosive Soils within the Plan Area.

III.4.2.2.3 Expansive Soils

Expansive soil volumes can change significantly with variations in soil moisture content. Expansive soils are typically fine grained, with a high percentage of clay that expands and contracts as soil moisture content fluctuates. Clay soil expansion and contraction can damage building foundations, concrete flatwork, and asphalt or concrete pavements through uplift and swelling. As shown in Table III.4-1, there are nearly 589,000 acres of predominantly clay soil within the Plan Area. See Figure R1.4-1 through Figure R1.4-10 in Appendix R1 for soil textures, by ecoregion subarea. See also Tables R1.4-3 through R1.4-12, in Appendix R1.

III.4.2.2.4 Desert Pavement

Desert pavement is composed of close-packed angular or rounded rock fragments with an often dark varnish cover. These layers cover fine-grained silt and clay particles beneath

the rock pavement surface. The interstitial and underlying material can be highly calcareous with low permeability. Desert pavements form in the most arid parts of the Plan Area where average annual rainfall is less than 8 inches. These areas typically support a sparse seasonal cover of ephemeral plants and few, if any, perennial plant species. Desert pavement generally overlies older alluvium formations within the Plan Area. Topographically, pavements tend to form along the middle elevations of alluvial fans, where stormflow runs along distinct down-cut channels between raised areas of desert pavement. The tightly packed and caliche-rich (calcium carbonate) surface of desert pavement inhibits infiltration of precipitation and promotes runoff, which funnels water into adjacent small channels. Aeolian processes facilitate the formation of desert pavements. If desert pavement is damaged by vehicle traffic or grading, it loses its armoring function and can increase the likelihood of soil erosion from surface runoff.

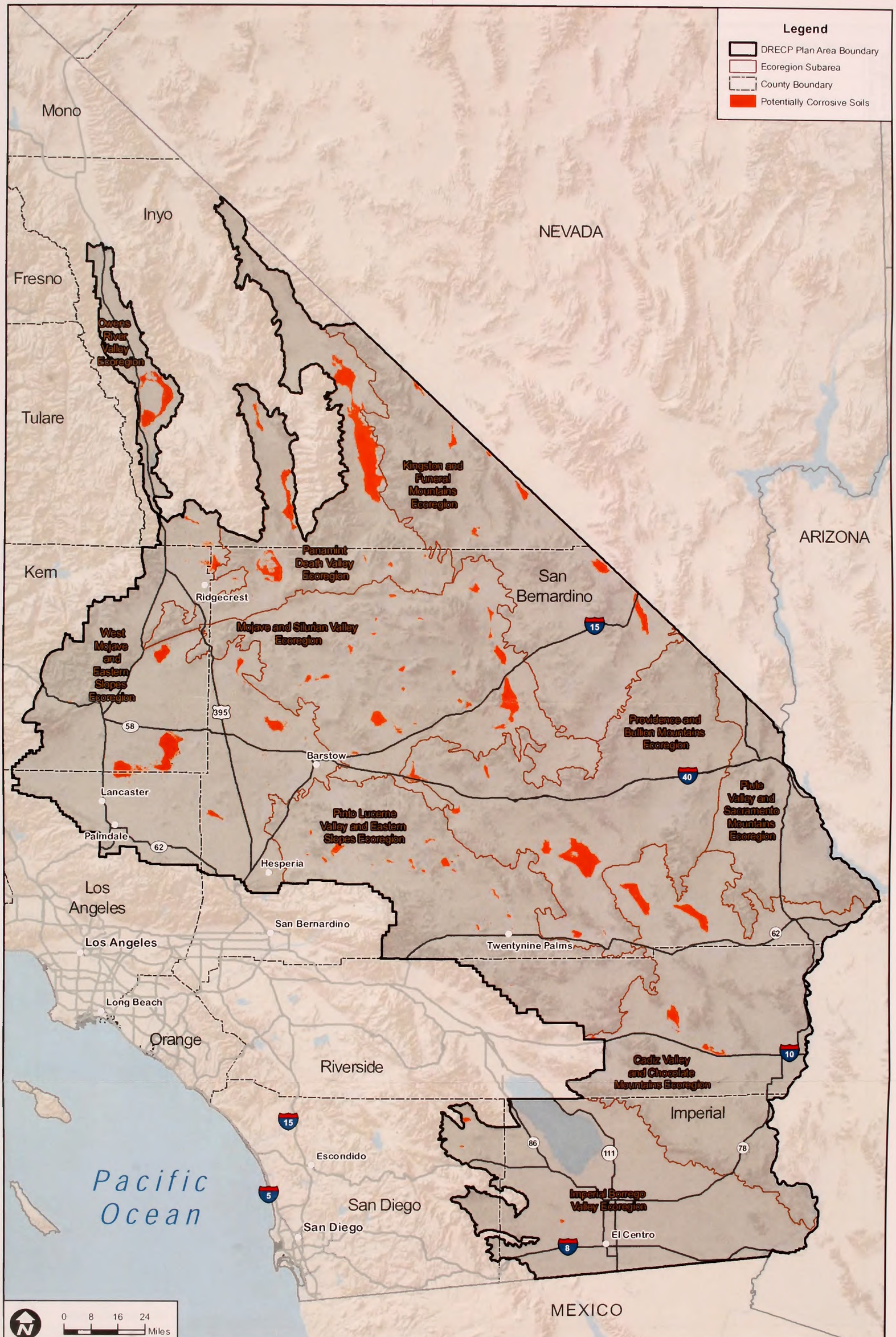
III.4.3 Faulting and Seismicity

Earthquakes happen when large masses of subsurface rock move against each other along fractures called faults. The shaking from earthquakes can be significant, and can be felt many miles from their actual epicenters, depending on the type of earthquake and the characteristics of underlying soils and geology (BLM 2008).

Earthquakes can cause property damage and loss of life. Seismic hazards include ground shaking, landslides and rockfalls, liquefaction, and ground ruptures (surface faulting). Most widespread damage and loss of life results from ground shaking, because it can cause structure failures and collapses, even at great distances from the fault rupture (U.S. Geological Survey [USGS] 2012). Specific potential seismic hazards in the Plan Area are described in Section III.4.4.

There are approximately 1,000 known earthquake faults within the Plan Area, as shown in Figure III.4-4, Earthquake Faults within the Plan Area. The largest are the San Andreas and San Jacinto faults, which are in the Imperial Borrego Valley ecoregion subarea. The San Andreas Fault also extends through the West Mojave and Eastern Slopes ecoregion subarea.

The assessment of risk from earthquakes is complex and usually expressed as zones of probability for given accelerations from shaking. The highest hazard risk within the Plan Area occurs along the San Andreas and San Jacinto faults, along the western boundary of the Plan Area, and within Imperial Valley. Figure III.4-5 through Figure III.4-12 shows existing earthquake faults by ecoregion subarea. Not all ecoregion subareas have earthquake faults. Figure III.4-13, Peak Horizontal Ground Acceleration within the Plan Area, shows the peak accelerations with a 10% chance of being exceeded within the next 50 years.

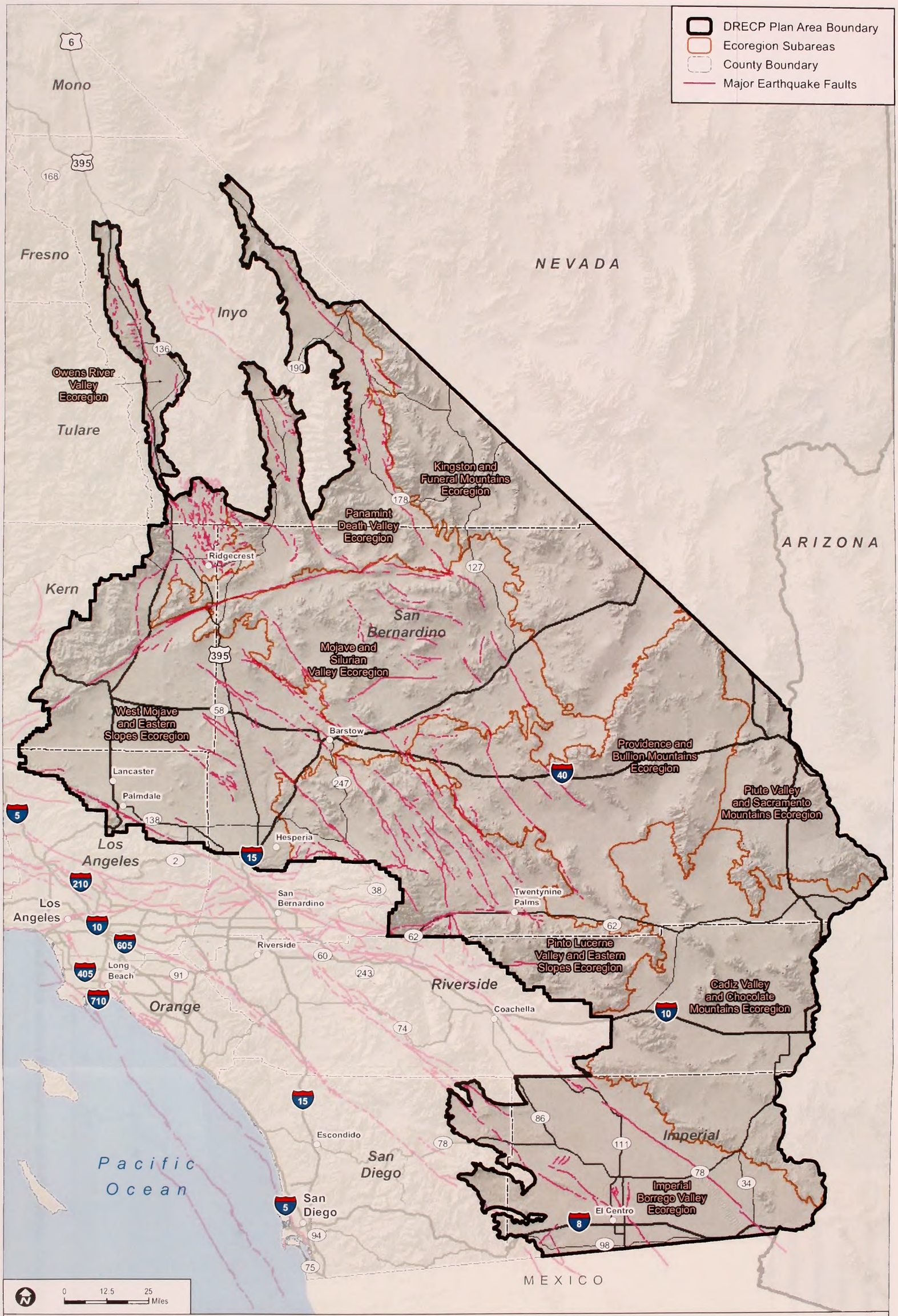


Sources: ESRI (2014); CEC (2013); DATABASIN (2014b)

FIGURE III.4-3

Potentially Corrosive Soils within the Plan Area

INTENTIONALLY LEFT BLANK



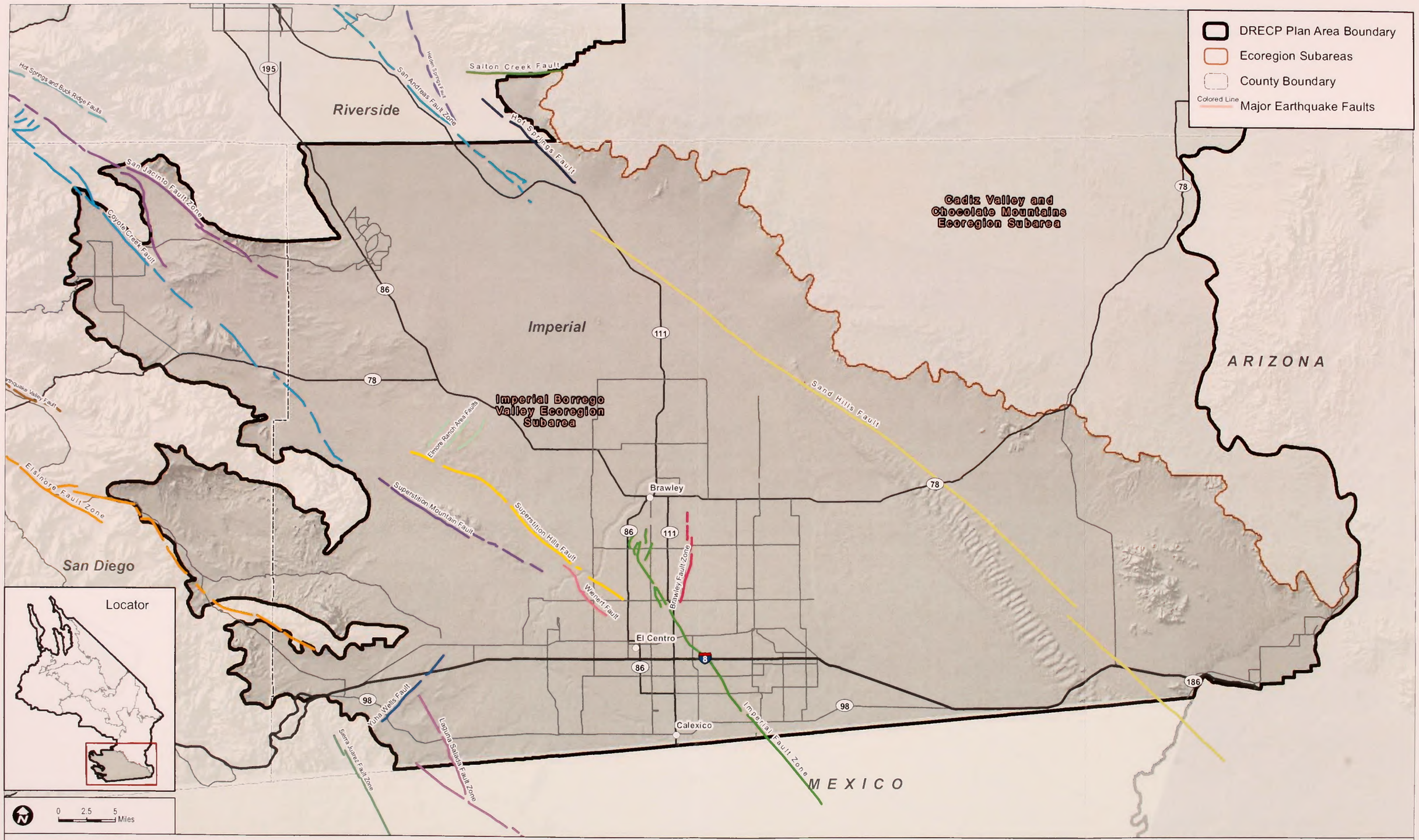
Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CA Dept. of Conservation, Division of Mines and Geology (1994)

FIGURE III.4-4

Earthquake Faults within the Plan Area

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.4-Soils\figIII.4-4.mxd 8/19/2014

INTENTIONALLY LEFT BLANK



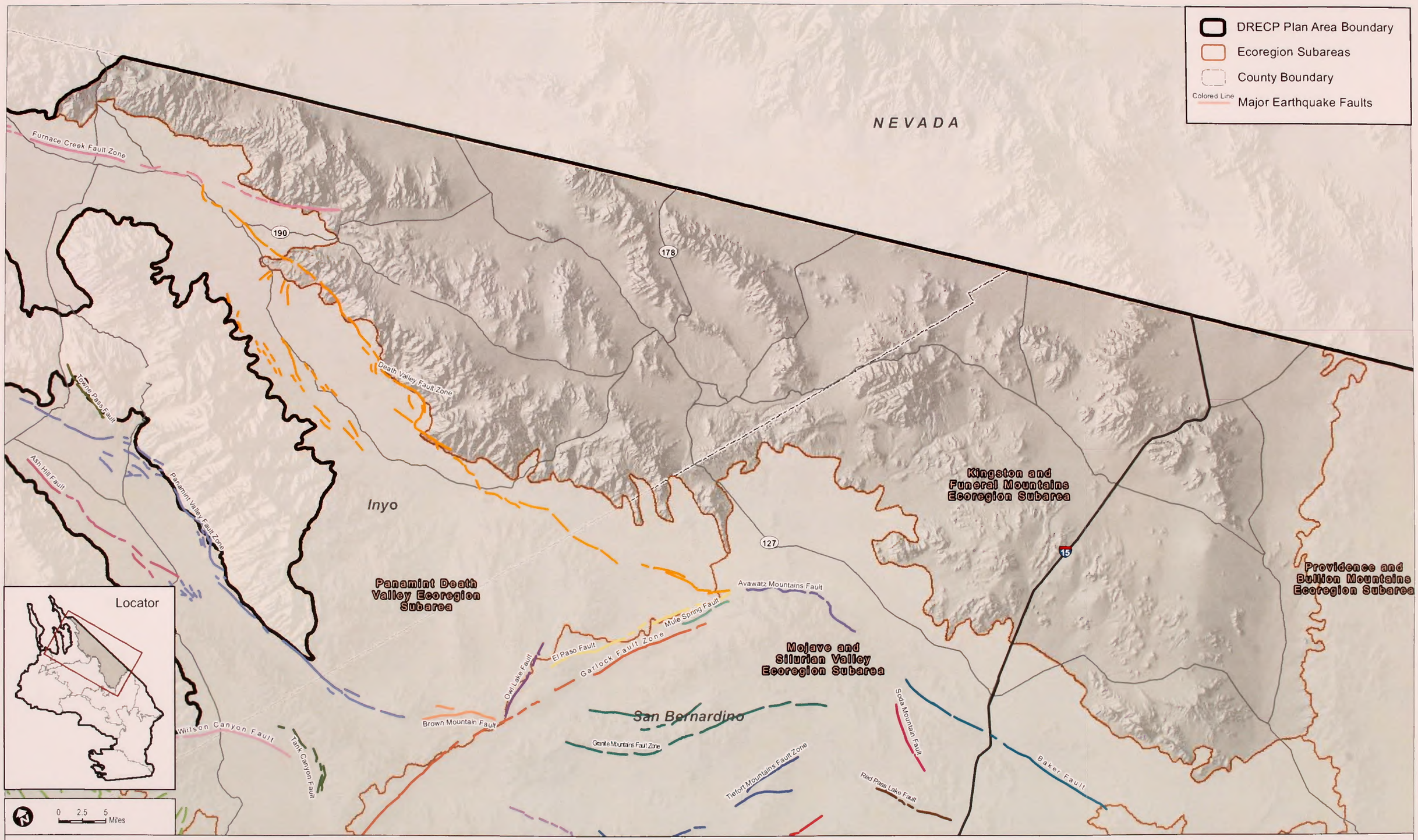
Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CA Dept. of Conservation, Division of Mines and Geology (1994)

FIGURE III.4-5

Earthquake Faults within the Imperial Borrego Valley Ecoregion Subarea

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_II\III.4-Soils\figIII.4-5.mxd 8/19/2014

INTENTIONALLY LEFT BLANK



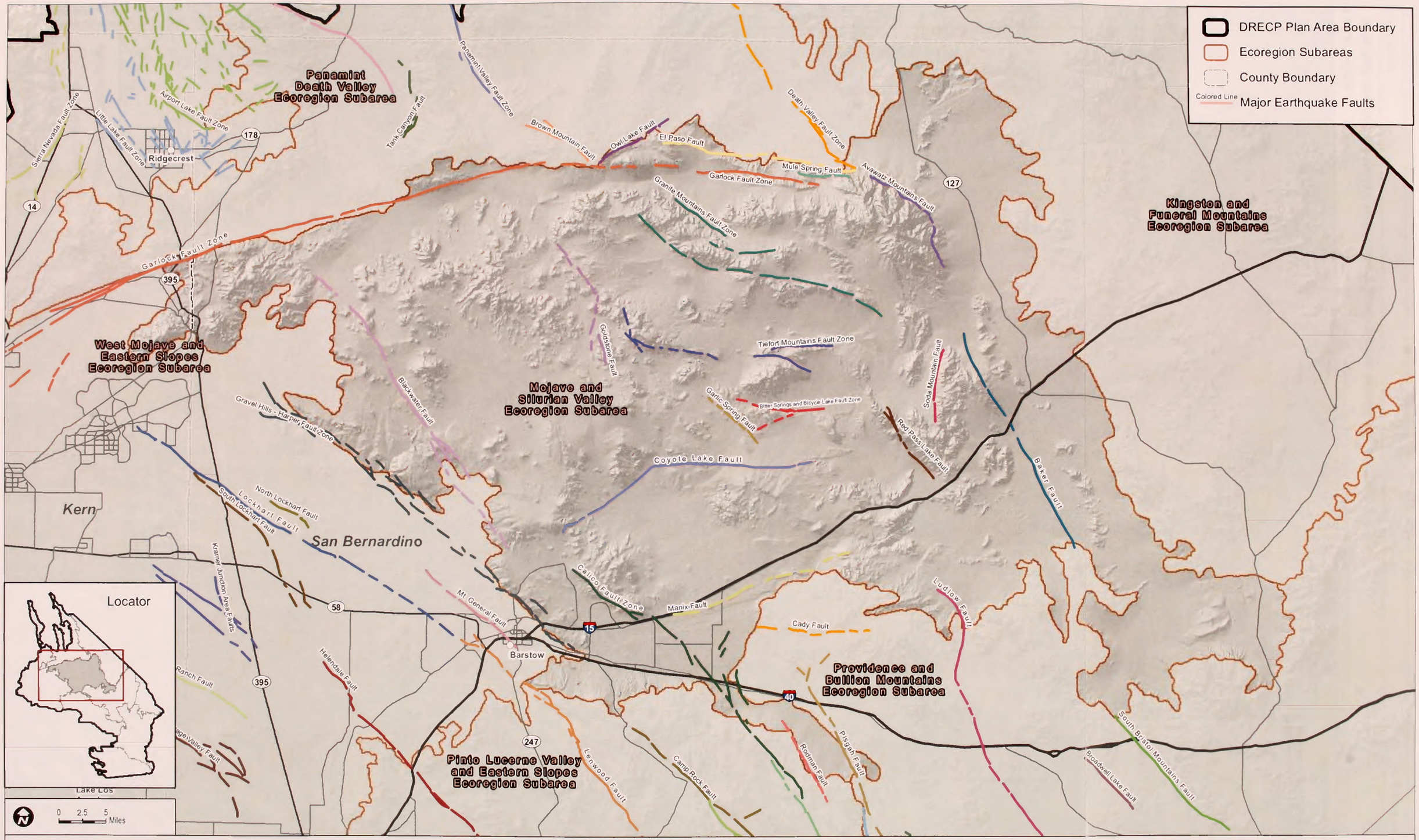
Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CA Dept. of Conservation, Division of Mines and Geology (1994)

FIGURE III.4-6

Earthquake Faults within the Kingston and Funeral Mountains Ecoregion Subarea

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.4-Soils\figIII.4-6.mxd 8/19/2014

INTENTIONALLY LEFT BLANK



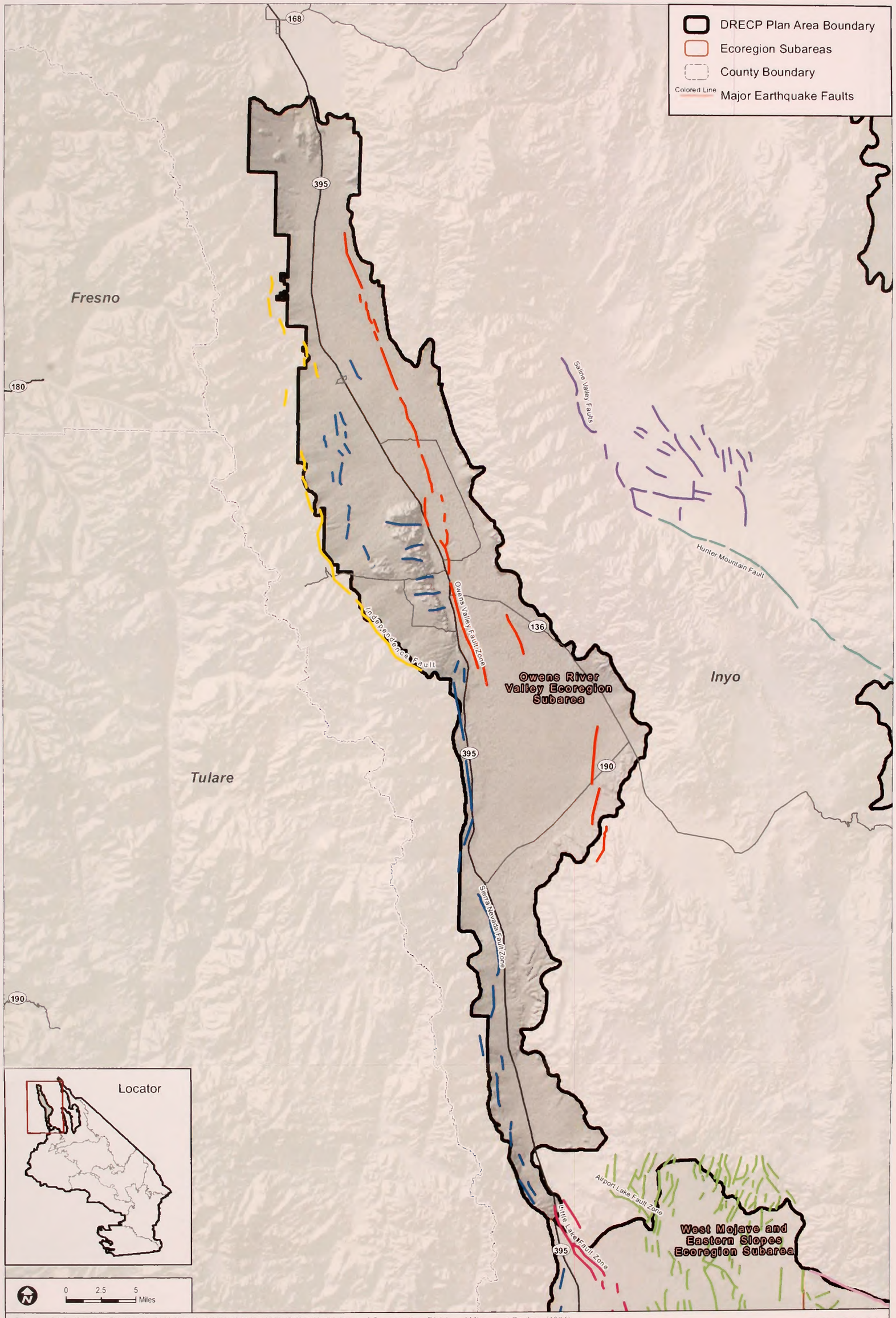
Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CA Dept. of Conservation, Division of Mines and Geology (1994)

FIGURE III.4-7

Earthquake Faults within the Mojave and Silurian Valley Ecoregion Subarea

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.4-Soils\figIII.4-7.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

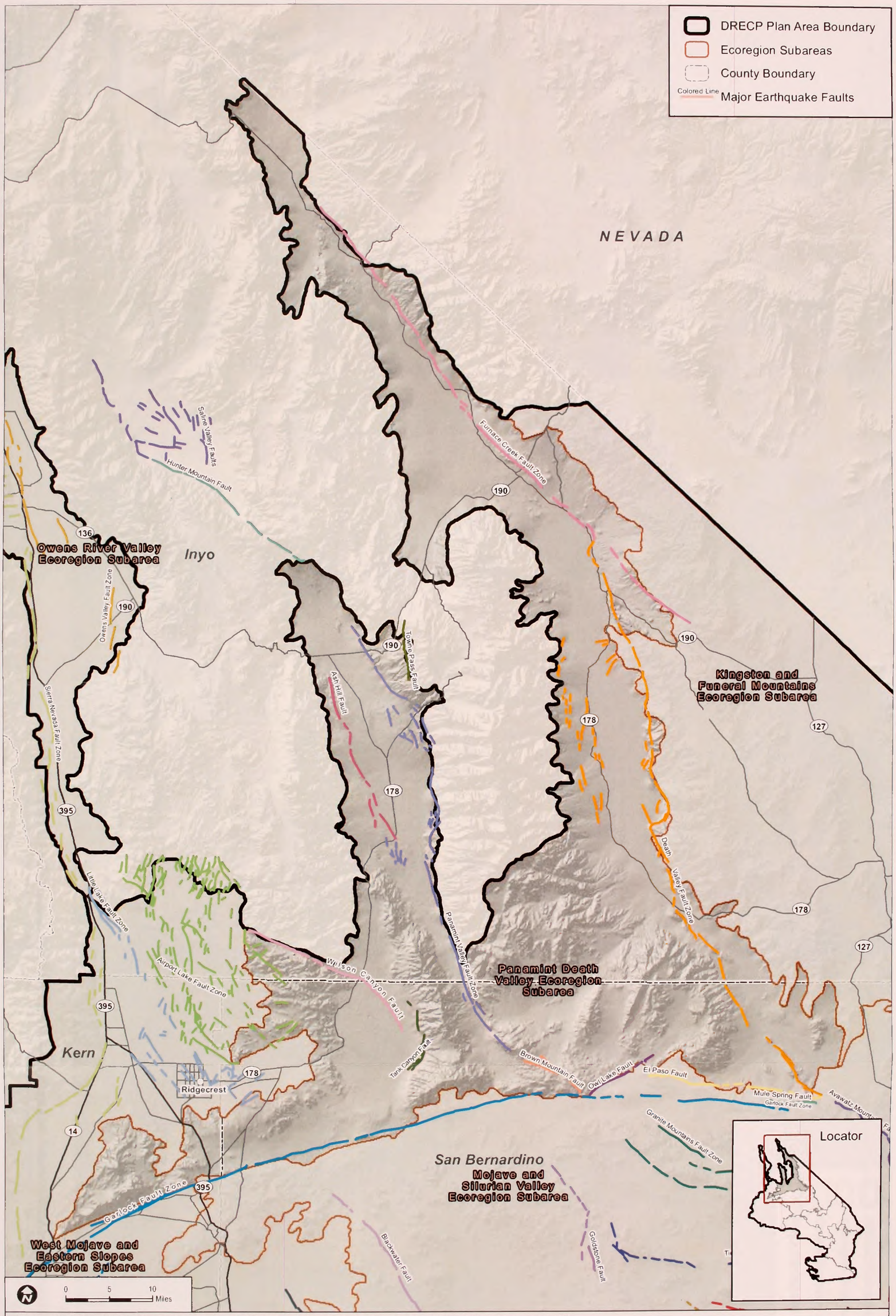


Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CA Dept. of Conservation, Division of Mines and Geology (1994)

FIGURE III.4-8

Earthquake Faults within the Owens River Valley Ecoregion Subarea

INTENTIONALLY LEFT BLANK



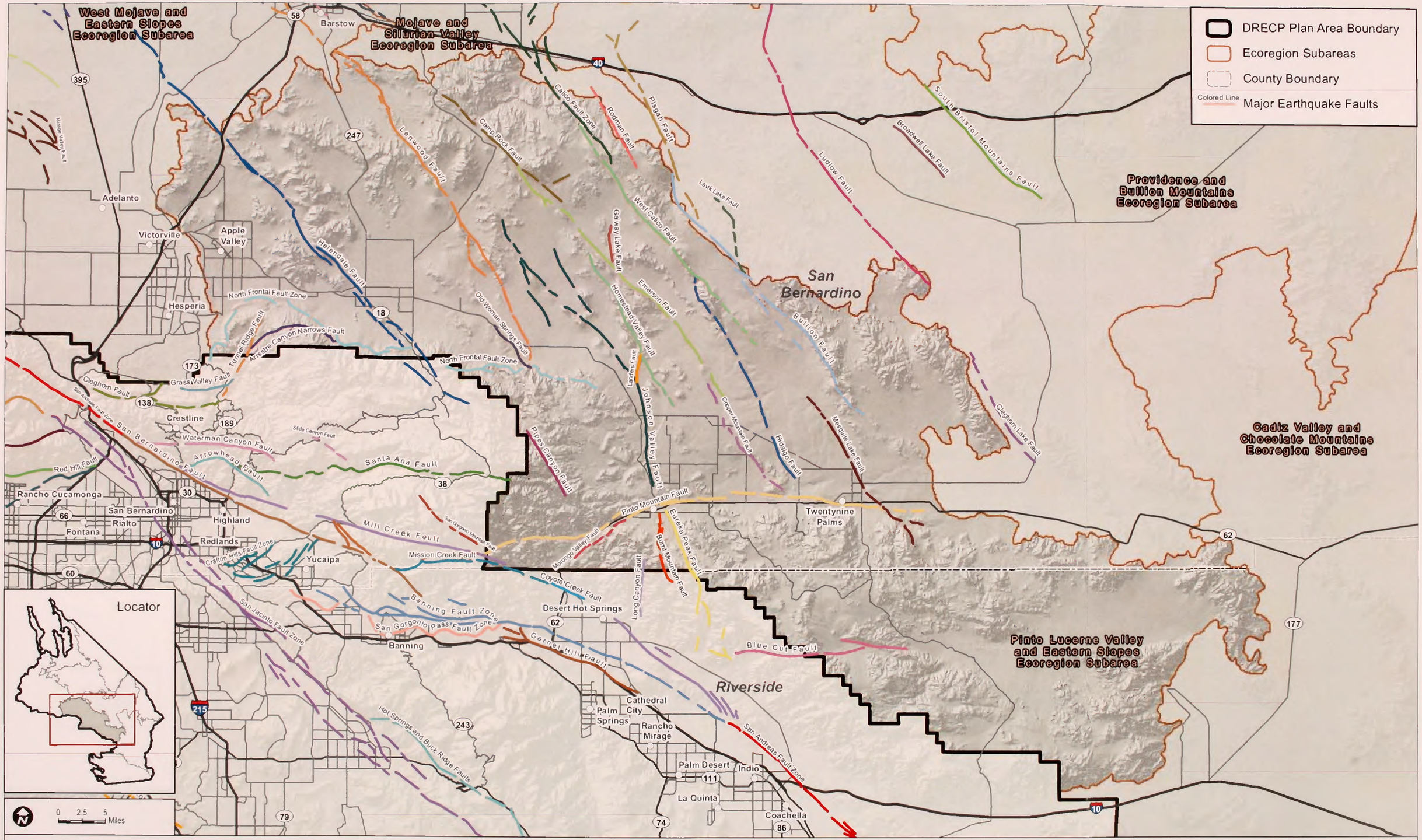
Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CA Dept. of Conservation, Division of Mines and Geology (1994)

FIGURE III.4-9

Earthquake Faults within the Panamint Death Valley Ecoregion Subarea

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.4-Soils\figIII.4-9.mxd 8/19/2014

INTENTIONALLY LEFT BLANK



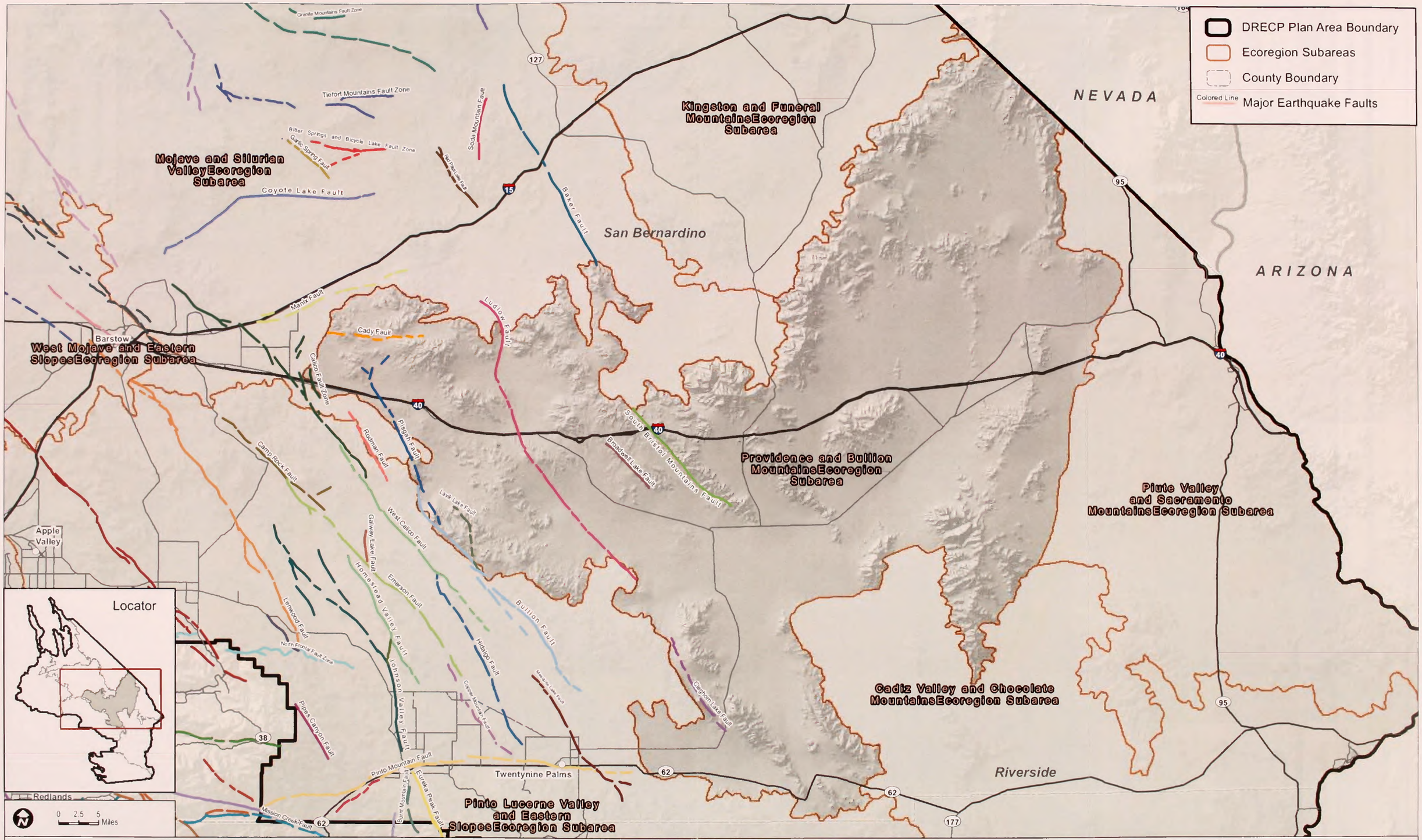
Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CA Dept. of Conservation, Division of Mines and Geology (1994)

FIGURE III.4-10

Earthquake Faults within the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_II\III.4-Soils\figIII.4-10.mxd 8/19/2014

INTENTIONALLY LEFT BLANK



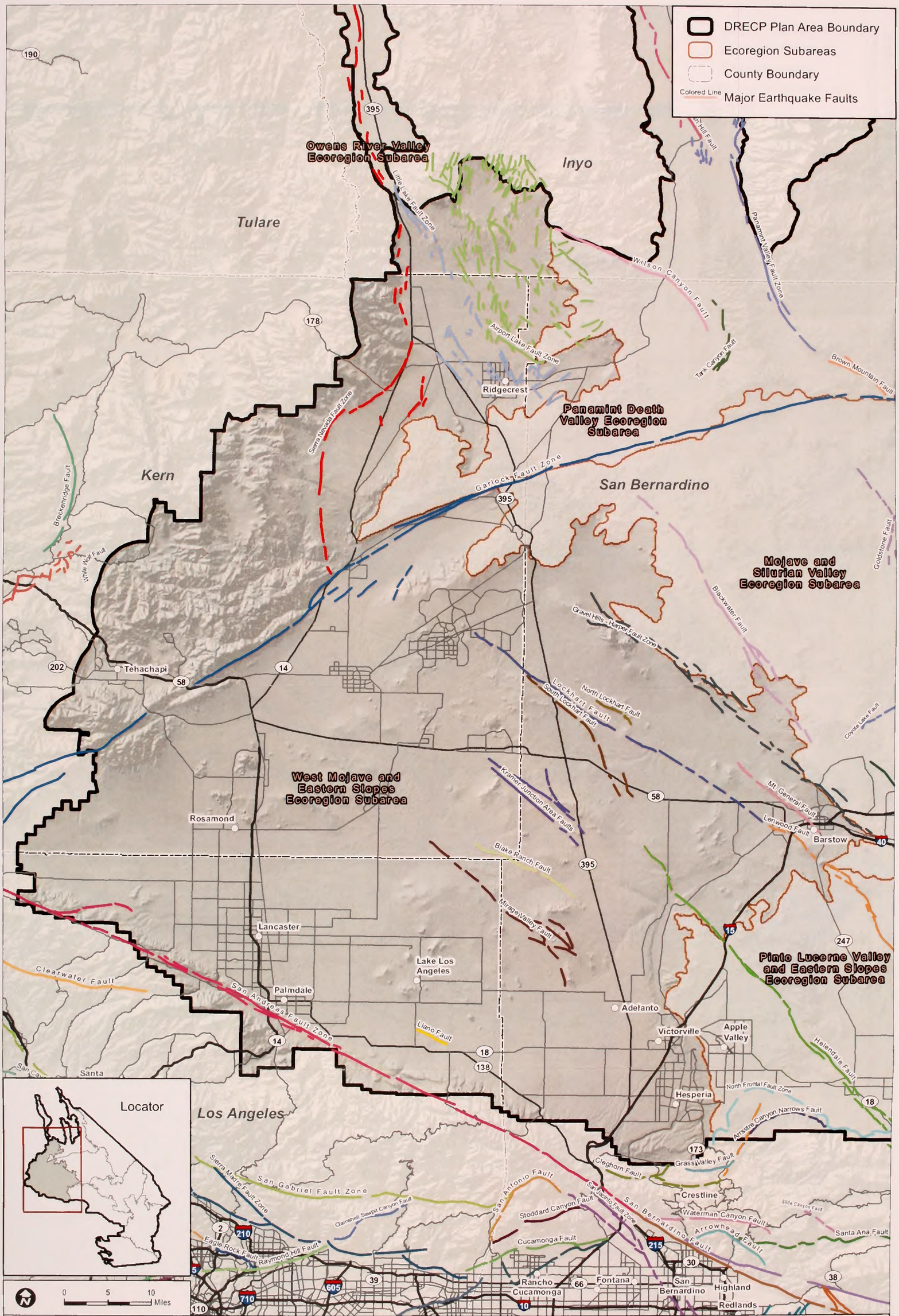
Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CA Dept. of Conservation, Division of Mines and Geology (1994)

FIGURE III.4-11

Earthquake Faults within the Providence and Bullion Mountains Ecoregion Subarea

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.4-Soils\figIII.4-11.mxd 8/19/2014

INTENTIONALLY LEFT BLANK



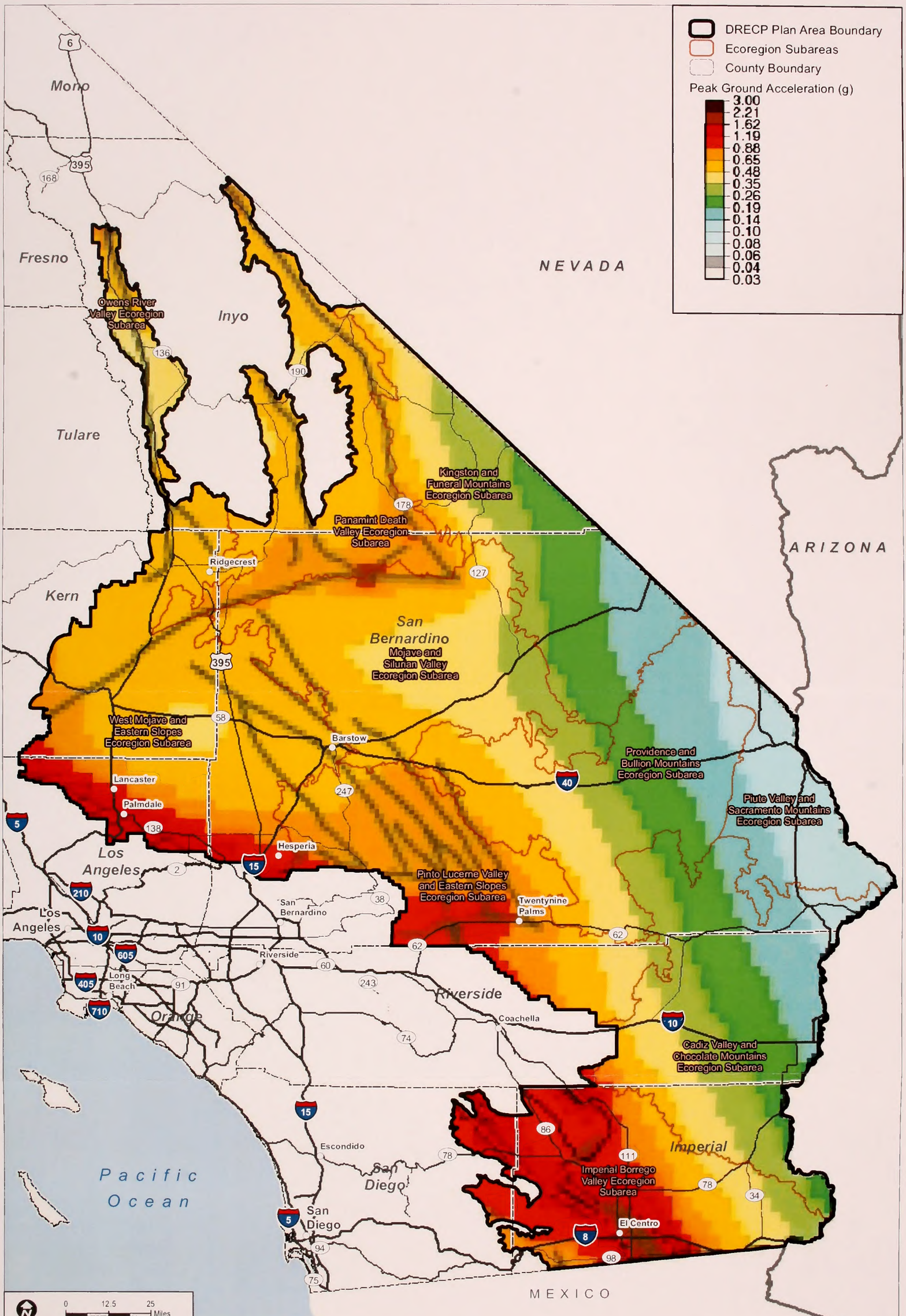
Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); CA Dept. of Conservation, Division of Mines and Geology (1994)

FIGURE III.4-12

Earthquake Faults within the West Mojave and Eastern Slopes Ecoregion Subarea

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.4-Soils\figIII.4-12.mxd 8/19/2014

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); U.S. Geological Survey National Seismic Hazard Maps (2008)

FIGURE III.4-13

Peak Horizontal Ground Acceleration within the Plan Area (Lands with a 10% probability of exceedance within 50 years)

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.4-Soils\figIII.4-13.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

Earthquake magnitude is measured on the Richter magnitude scale, a logarithmic scale that measures the amplitudes of the waves of motion 100 km from the epicenter of an earthquake. Table III.4-2, Largest Faults within the Plan Area, lists the largest faults based on the probable Richter-magnitude they could generate. The table presents the fault name, magnitude of earthquake capable of being generated, the ecoregion subarea in which it is located and the length of each fault. Also in the table is whether the fault is within an Alquist-Priolo Fault Zone. According to the Alquist-Priolo Earthquake Fault Zoning Act (1972), fault zones are distinguished from faults based on the potential for surface fault rupture and whether the fault is active. The USGS Earthquake Glossary defines active faults as those that have moved within the last 11,000 years (USGS 2014).

Table III.4-2
Largest Faults within the Plan Area

Fault (Alquist-Priolo Fault Zones indicated with asterisks)	Probable Richter magnitude	Ecoregion Subarea(s)	Length of Fault per Ecoregion (miles)
San Andreas Fault*	6.8 – 8.0	Imperial Borrego Valley	7.3
		West Mojave and Eastern Slopes	60.8
Furnace Creek Fault	6.8 – 7.6	Kingston and Funeral Mountains	4.7
		Panamint Death Valley	40.2
Garlock Fault*	6.8 – 7.6	Mojave and Silurian Valley	30.8
		Panamint Death Valley	20.7
		West Mojave and Eastern Slopes	70.0
Owens Valley Fault*	6.5 – 8.2	Owens River Valley	41.4
Coyote Creek Fault	6.5 – 7.5	Imperial Borrego Valley	24.8
Elsinore Fault*	6.5 – 7.5	Imperial Borrego Valley	4.5
Laguna Salada Fault	6.5 – 7.5	Imperial Borrego Valley	7.0
Pinto Mountain Fault*	6.5 – 7.5	Pinto Lucerne Valley and Eastern Slopes	43.3
San Jacinto Fault*	6.5 – 7.5	Imperial Borrego Valley	25.3
Panamint Valley*	6.5 – 7.5	Panamint Death Valley	58.1
Lenwood Fault*	6.5 – 7.4	West Mojave and Eastern Slopes	6.1
Lockhart Fault	6.5 – 7.4	West Mojave and Eastern Slopes	33.3
North Lockhart Fault	6.5 – 7.4	West Mojave and Eastern Slopes	4.6
Death Valley Fault*	6.5 – 7.3	Kingston and Funeral Mountains	13.8
		Mojave and Silurian Valley	1.4
		Panamint Death Valley	89
Emerson Fault	6.5 – 7.3	Pinto Lucerne Valley and Eastern Slopes	30.3
Helendale Fault*	6.5 – 7.3	Pinto Lucerne Valley and Eastern Slopes	37.2
Johnson Valley Fault*	6.5 – 7.3	Pinto Lucerne Valley and Eastern Slopes	42.2

Table III.4-2
Largest Faults within the Plan Area

Fault (Alquist-Priolo Fault Zones indicated with asterisks)	Probable Richter magnitude	Ecoregion Subarea(s)	Length of Fault per Ecoregion (miles)
Gravel Hills – Harper Fault	6.5 – 7.2	West Mojave and Eastern Slopes	35.3
Blackwater Fault	6.5 – 7.1	West Mojave and Eastern Slopes	4.6
Bullion Fault*	6.5 – 7.1	Pinto Lucerne Valley and Eastern Slopes	26.1
		Providence and Bullion Mountain	9.4
Calico Fault*	6.5 – 7.1	Pinto Lucerne Valley and Eastern Slopes	9.8
		Providence and Bullion Mountain	2.8
North Frontal Fault Zone*	6.0– 7.1	Pinto Lucerne Valley and Eastern Slopes	39.2
Manix Fault*	6.0 – 7.0	Mojave and Silurian Valley	14.4
Mesquite Lake Fault*	6.0 – 7.0	Pinto Lucerne Valley and Eastern Slopes	17.3
Superstition Hills Fault*	6.0 – 6.8	Imperial Borrego Valley	19.7
Little Lake Fault Zone*	5.5 – 7.0	Owens River Valley)	0.8
		Panamint Death Valley	3.3
		West Mojave and Eastern Slopes	52.9
Brawley Fault Zone*	5.0 – 6.5	Imperial Borrego Valley (9.2)	9.2

Sources: Southern California Earthquake Data Center 2012; California Geologic Survey 2007

III.4.4 Other Geologic Hazards

This section addresses several different types of hazards. Of the geologic hazards that could affect renewable energy projects, two could result from fault movement: ground shaking and liquefaction. Other hazards that could occur in the Plan Area include subsidence and volcanic activity.

III.4.4.1 Ground Shaking

Earthquakes are the principal geologic activities affecting public safety and structures throughout most of California. The ground shaking from earthquakes creates various secondary hazards including:

- Differential ground settlement.
- Soil liquefaction, rock and mudslides, ground lurching, and avalanches.
- Ground displacement along the fault.
- Floods from dam or levee failures.

- Fires.
- Disruptions to water, sewer, gas, electricity, transportation, and communication services.

The intensity of ground shaking during an earthquake is dependent upon (1) the distance between a project area and the epicenter (point at the earth's surface directly above the initial movement of the fault at depth) of the earthquake, (2) the magnitude or size of the earthquake, (3) the depth at which the earthquake occurs, and (4) the underlying geologic conditions. A commonly used benchmark for intensity is peak horizontal ground acceleration, which is the probability that an earthquake will exceed the peak acceleration of gravity value (g) by 10%. Peak horizontal ground acceleration is the ground motion effect at a site for all earthquakes believed to be possible at that site. Figure III.4-13, Peak Horizontal Ground Acceleration within the Plan Area, shows these zones mapped for the DRECP area. Table III.4-3, Earthquakes within the Plan Area with a Magnitude 6.0 or Higher, lists large earthquakes that have occurred within the Plan Area over the last 75 years.

Table III.4-3
Earthquakes within the Plan Area with a Magnitude 6.0 or Higher

Earthquake Name	Date	Magnitude	Location
Hector Mine Earthquake	October 16,1999	7.1	North of Twentynine Palms
Landers Earthquake	June 28,1992	7.3	Yucca Valley
Superstition Hills Earthquake	November 24, 1987	6.6	West of Brawley
Borrego Mountain Earthquake	April 9, 1968	7.0	East of Borrego Springs
Imperial Valley Earthquake	May 18, 1940	6.9	North of Calexico
Walker Pass Earthquake	March 15, 1946	6.0	West of Ridgecrest
Manix Earthquake	April 10, 1947	6.5	East of Newberry Springs
Imperial Valley Earthquake	October 15, 1979	6.4	West of El Centro
1954 San Jacinto Fault	March 19, 1954	6.4	East of Borrego Springs
San Jacinto Fault	March 25, 1937	6.0	Northeast of Borrego Springs

Source: SCEC (2014)

III.4.4.2 Liquefaction

Liquefaction can occur in loose, fine-to-medium-grained soils that are water-saturated, in areas where the groundwater table is within approximately 50 feet of the ground surface. Earthquake shaking causes the soil to weaken, resulting in its inability to stick together; the soil therefore behaves as a liquid. Liquefaction can result in loss of the soils' ability to support a load such as a building foundation, lateral spreading, subsidence, and buoyancy effects. Susceptibility to liquefaction is a function of the

sediment density, water content, soil thickness, and the peak ground acceleration of an earthquake at the location. In the 1989 Loma Prieta earthquake in the San Francisco Bay Area, liquefaction in the city's Marina District caused many large buildings to slide off their foundations, and also caused underground natural gas line ruptures that in turn caused major fires.

III.4.4.3 Subsidence

Land subsidence normally results from fluid withdrawal from groundwater pumping, oil extraction, or geothermal generation. (Logfren 1973). Fluid removal can create subsurface voids from ground surface sinking and soil permeability loss. Subsidence from shifting earth plates can also occur over large areas. Subsidence from fluid extraction can occur near geothermal areas (Logfren 1973). In the western portion of the Plan Area, groundwater levels in some basins have declined more than 100 feet from predevelopment conditions. Land subsidence could occur within the Plan Area. See Chapter III.6, Section III.6.3.4, Subsidence from Groundwater Pumping for further discussion of subsidence.

III.4.4.4 Volcanic Activity

As shown in Table R1.4-1 (Surficial Geology in the Plan Area, Appendix R1), the Plan Area includes 60,252 acres of young (Holocene) volcanic materials on the land surface. See Figure III.4-1, Surficial Geology, for the locations of this volcanic rock type.

There are several areas of potential volcanic hazards within the Plan Area. According to the U.S. Geological Survey (USGS), areas designated as "Moderate Threat Volcanoes" (defined as posing a risk to aviation and a low to very-low threat to people and property), include Ubehebe Craters in Death Valley National Park and Coso Volcanic Field in Inyo County (USGS 2005). The Plan Area includes two features deemed "High Threat Volcanos" (defined as posing significant risks to aviation and proximate to smaller population centers and power and transportation infrastructure). These high-risk features are the Salton Buttes in Imperial County and the Lavic Lake Volcanic Field in San Bernardino County.

III.4.5 Geology and Soils in Bureau of Land Management Land Use Plan Amendment

The BLM LUPA area is a subset of the total Plan Area. Geologic hazards and soils of concern are widespread within the Plan Area, so the LUPA affected environment is considered to have a similar set of resources and hazards as those defined in Sections III.4.2, III.4.3, and III.4.4 for the entire Plan Area.

III.4.6 Geology and Soils in Natural Community Conservation Plan Area

The affected environment for the NCCP area is the same as that described above for the entire Plan Area. While there are Department of Defense (DOD) lands and tribal lands within the Plan boundaries, the Plan does not analyze effects on these lands so they are not included in the description of the affected environment.

III.4.7 Geology and Soils in General Conservation Plan Area

The affected environment for the General Conservation Plan (GCP) area includes a subset of the lands covered by Plan-wide analysis and the NCCP. In addition to excluding DOD and tribal lands, the GCP lands exclude all other federal lands (e.g., BLM-administered public lands, national parks, U.S. Forest Service lands). Geologic hazards and soils of concern are widespread within the Plan Area, so the GCP affected environment has a similar set of resources and hazards as those defined in Sections III.4.2, III.4.3, and III.4.4 for the entire Plan Area.

III.4.8 Geology and Soils Outside the Plan Area

III.4.8.1 Transmission Out-of-Plan Area

This section discusses baseline geologic, seismic, and soils information for the respective study areas and surrounding regions. Resources in these regions are generally discussed using information gathered from the environmental clearance documents for four large transmission line projects.

III.4.8.1.1 San Diego Area

The San Diego area corridor extends from Ocotillo, in southwestern Imperial County, to San Diego, roughly following the existing Sunrise Powerlink Project corridor westward.

III.4.8.1.1.1 Regional Physiography

The San Diego area crosses two major physiographic provinces in California: the Colorado Desert and the Peninsular Ranges. The region is geologically complex, with a variety of rock types, faults, and geologic features. The San Diego area skirts the edges of and crosses fault-bounded mountain ranges and desert features such as playas, badlands, alluvial fans and pediments, and desert valleys bisected by numerous arroyos and washes.

The Colorado Desert region lies mostly at low elevation and consists of desert basins with interspersed northwest-trending mountain ranges. In the Colorado Desert region, the

corridor is located in the Imperial Valley portion of the Salton Trough. The Salton Trough is a topographic and structural trough that extends from southeastern California into Mexico, and is about 130 miles long and as much as 70 miles wide.

The Peninsular Ranges region is divided into two geomorphic zones: the mountains of the Peninsular Ranges to the east, and the Coastal Plain to the west. The mountains of the Peninsular Ranges are predominantly north–south trending ranges that stretch 900 miles from Southern California to the southern tip of Mexico's Baja California peninsula. The Coastal Plain area consists of a "layer cake" sequence of Tertiary to late Cretaceous marine and nonmarine sedimentary rock that forms mesas and terraces primarily overlying Mesozoic granitic rocks. The terraces and mesas along the Coastal Plain were formed by fluctuations in relative elevations of the land and sea (uplift and sea level changes) (CPUC and BLM 2008).

III.4.8.1.1.2 Geology

The San Diego area is underlain in various areas by sedimentary, volcanic, igneous, and metamorphic rocks ranging in age from Quaternary (approximately the last 1.6 million years) to Pre-Cenozoic (greater than 65 million years). It encompasses lacustrine deposits, alluvial plains and valleys, alluvial fans and pediments, mountain passes, and hills (CPUC and BLM 2008).

III.4.8.1.1.3 Slopes

Most of the San Diego area does not include areas identified as existing landslides. However, some of the sedimentary rock may be susceptible to slope failures in areas with moderate to steep slopes and unfavorable bedding dip directions. There may be unmapped landslides and areas of localized slope instability in the hills. Areas underlain by granitic rocks would most likely only be susceptible to surficial soil creep or rockfall in overly steep areas (CPUC and BLM 2008).

III.4.8.1.1.4 Soils

The soils along the San Diego Area reflect the underlying rock type, the extent of weathering of the rock, the degree of slope, and the degree of human modification. The corridor crosses undeveloped land, small portions of agricultural and rural residential land, small portions of light industrial and commercial areas, and suburban residential areas.

III.4.8.1.1.5 Faults and Seismicity

The seismicity of the San Diego area is dominated by the northwest trending San Andreas Fault system. The San Andreas Fault system reacts to stress generated by the motions of

the Pacific and North American Tectonic plates. The Rose Canyon-Newport Inglewood fault system and the Agua Blanca fault zone are also seismic sources that have potential to affect San Diego. However, the most significant faults in the San Diego area are those associated with the San Andreas fault system, which includes faults in the San Andreas, San Jacinto, and Elsinore fault zones:

- **San Andreas Fault Zone** is a 680-mile active right-lateral strike-slip complex of faults that has historically caused many of the damaging earthquakes in Southern California. The Coachella segment of the San Andreas Fault extends from Cajon Pass (near Bakersfield) to the Salton Sea.
- **San Jacinto Fault Zone** is a major element of the San Andreas Fault system in Southern California, with historic earthquakes (if not ground rupture) associated with most of its sections. The seismically active San Jacinto Fault zone is a complex system of strike-slip fault segments connected by releasing and restraining bends and stepovers that extend for 240 km from the San Andreas Fault near Cajon Pass through the Peninsular Ranges into the southwestern Imperial Valley.
- **Elsinore Fault Zone** is one of the largest in Southern California, extending over 155 miles from the Los Angeles Basin southeastward to the Mexico border where it continues southeast as the Laguna Salada Fault. In the project vicinity, the Elsinore Fault is double stranded, with the two strands approximately parallel to each other and separated by approximately 4 to 7.5 miles (Aspen 2008).

III.4.8.1.1.6 Liquefaction

Due to the generally deep water table (with the exception of areas immediately adjacent to the Colorado River), liquefaction is not considered a potential hazard in most of the San Diego area (CPUC and BLM 2008). However, there is liquefaction potential in the San Diego Bay and Mission Bay areas near the Rose Canyon Fault zone and other associated faults.

III.4.8.1.2 Los Angeles Area

This transmission corridor extends from Palmdale to the Los Angeles Basin, roughly following segments 6, 7, and 11 of the Tehachapi Renewable Transmission Project (TRTP).

III.4.8.1.2.1 Regional Physiography

The Los Angeles area is located within the Mojave Desert and Transverse ranges geomorphic provinces of Southern California. The area is characterized by a complex series of mountain ranges and valleys with dominant east–west trends. The corridor traverses distinct geographic areas including the Antelope Valley, the Leona Valley (the San Andreas rift zone), the Liebre–Sierra Pelona Mountains, the San Gabriel Mountains, San Gabriel

Valley, and the Montebello and Puente hills. The Antelope Valley consists of approximately 1,200 square miles of elevated desert terrain, located along the western edge of the Mojave Desert. The Leona Valley is a small, northwest–southeast trending longitudinal valley formed by movement on multiple overlapping strands of the San Andreas Fault in the San Andreas rift zone, and in the Los Angeles area is bounded on the northeast by the Portal Hills and on the southwest by the foothills of the Sierra Pelona. The Liebre–Sierra Pelona Mountains are a small northwest–southeast trending mountain range within the central Transverse Ranges. The San Gabriel Mountains are comprised of Precambrian to Cretaceous igneous and metamorphic rock. The San Gabriel Valley is a deep structural basin predominantly filled with semi-consolidated to unconsolidated Quaternary alluvial deposits. The Montebello Hills consist predominantly of Pliocene marine and nonmarine sedimentary rock, whereas the Puente Hills are composed of older (Miocene and Pliocene) marine sedimentary rock (CPUC and USFS 2010).

III.4.8.1.2.2 Geology

The five corridor areas of distinctive geologic character and province are (1) the Antelope Valley, (2) the San Andreas rift zone, (3) the Liebre–Sierra Pelona Mountains, (4) the San Gabriel Mountains, and (5) the Los Angeles Basin. Landforms include lacustrine deposits, alluvial plains and valleys, alluvial fans and pediments, mountain passes, and hills. The route is underlain in various areas by sedimentary, volcanic, igneous, and metamorphic units ranging in age from Quaternary (approximately the last 1.6 million years) to Pre-Cenozoic (greater than 65 million years) (CPUC and USFS 2010).

III.4.8.1.2.3 Soils

The corridor includes undeveloped desert and forest land, agricultural and rural residential land, light industrial and commercial areas, and suburban residential areas.

III.4.8.1.2.4 Slopes

The Los Angeles Area generally does not cross areas with existing landslides. However, mountainous and hilly areas are partially underlain by landslide-prone metamorphic (Pelona Schist and weathered gneiss), sheared igneous and metamorphic (along the San Gabriel Fault), and sedimentary (Puente formation) rocks that are susceptible to slope failures in areas with moderate to steep slopes and unfavorable bedding dip directions. Unmapped landslides and areas of localized slope instability may also be encountered in the hills and mountains. Areas underlain by granitic rocks are generally only susceptible to surficial soil creep, or to rockfall in overly steep areas (CPUC and U.S. Forest Service [USFS] 2010).

III.4.8.1.2.5 Faults and Seismicity

The Los Angeles area is subject to ground shaking earthquakes on multiple strands of the San Andreas Fault system, as well as on the Garlock and other Transverse Ranges faults. Active faults on the San Andreas system are predominantly strike-slip faults with translational movement. Active reverse or thrust faults in the Transverse Ranges include blind thrust faults, responsible for the 1987 Whittier Narrows and the 1994 Northridge earthquakes, and the range-front faults responsible for uplift of the Santa Susana and San Gabriel mountains. The Transverse Ranges fault system consists primarily of blind, reverse, and thrust faults that cause tectonic compressional stresses in the region. Blind faults have no surface expression and have been located with subsurface geologic and geophysical methods. This combination of translational and compressional stresses causes diffuse seismicity across the region (CPUC and USFS 2010).

III.4.8.1.2.6 Liquefaction

Portions of the corridor would meet the criteria for liquefaction in areas underlain by young alluvial deposits including areas in the Leona Valley, the San Gabriel Valley, and in the alluvial and creek deposits of intervening drainages. Older consolidated sedimentary deposits, fine- or coarse-grained deposits, and/or well-drained sedimentary materials are less susceptible to liquefaction (CPUC and USFS 2010).

III.4.8.1.3 Central Valley

This transmission corridor extends from Rosamond in the northern Mojave Desert to Tracy, roughly following the existing Path 15 and 26 corridors. For discussion of geology and soils in the southern portion in the Western Mojave, please refer to the Los Angeles Area in Section III.4.8.1.2.

III.4.8.1.3.1 Regional Physiography

The Central Valley area is located along the boundary between the San Joaquin Valley on the east and the Diablo Range on the west. The San Joaquin Valley comprises the southern half of California's Central Valley geomorphic province, while the Diablo Range is part of the Coast Ranges geomorphic province. The Coast Ranges extend along the California coast from the Santa Ynez River in the south to the Klamath Range in the north.

The topography is varied, with low-rolling to moderately steep slopes in the foothills of the Diablo Range and gentle to nearly level slopes on the alluvial fans and the valley floor. Elevations in the Central Valley area range from about 175 feet in the valleys to over 1,200 feet along some ridges in the foothills.

The Diablo Range is a series of low ridges with elevations of up to 3,000 feet. These mountains form a natural barrier against the coastal winds and fogs, creating a rain shadow effect on the western side of the valley. Numerous intermittent drainages such as the Panoche, Little Panoche, Arroyo Hondo, Cantua, Silver, Domengine, and Los Gatos creeks drain the eastern slopes of the Diablo Range. These creeks have a variable discharge, with periodic flooding that flushes sediments out of the mountains and foothills and deposits them on alluvial fans at the base of the foothills. Recent alluvial fan deposits may extend up to several miles into the valley, with larger, more extensive fans at the mouths of the larger drainages (CPUC 2001).

III.4.8.1.3.2 Geology

The Cretaceous sequence consists of both marine and nonmarine sediments that were laid down in near horizontal beds and have subsequently been uplifted, tilted, folded, and faulted over a long period of time to form the rocks of the eastern foothills of the Diablo Range. The Great Valley sequence is a grouping of sedimentary rocks that formed in the tectonic setting of a forearc basin, adjacent to a subduction zone. These rocks generally consist of well-indurated graywacke sandstone, siltstone, shale, and conglomerates. In the Plan Area, these rocks have been subdivided into the Panoche Formation and the Moreno Shale. The Great Valley sequence overlies rocks of the Franciscan complex, which consists of igneous and sedimentary rocks that have been folded, faulted, and partially metamorphosed, then uplifted onto the continental margin. Paleocene through Miocene marine sediments and Pliocene through Quaternary marine and nonmarine sediments overlie the Cretaceous sequence (CPUC 2001).

III.4.8.1.3.3 Soils

More than 24 different soil series and more than 100 soil types are present in the Central Valley Area. However, the predominant soil series are the Kettleman, Panoche, and Los Banos series, which make up over 90% of the soils:

- **Kettleman Series.** Soils of the Kettleman series have formed in place from the underlying soft sedimentary deposits in the foothills or upland areas. Most of the soils in this series consist of loam and clay loam—with minor fine sandy loam—and have good-to-excessive drainage.
- **Los Banos Series.** Soils of the Los Banos series are primarily developed on terrace deposits derived from weathering and erosion of older sedimentary rocks. They are found in the northern end of the Central Valley area.
- **Panoche Series.** The Panoche series soils are developed on recently deposited alluvial fan materials. The series contains a wide range of soil types, varying from sandy loam to silty clay, with loam and clay-loam the dominant types (CPUC 2001).

III.4.8.1.3.4 Faults and Seismicity

The faults in the Los Banos–Coalinga area were formed by the interaction between the Pacific and North American tectonic plates. Under the current tectonic regime, the Pacific Plate moves northwestward relative to the North American Plate. The primary right lateral, strike-slip faults of the San Andreas fault system cause most of the relative motion of the tectonic plates. In addition, numerous minor faults and folds cause a smaller portion of the crustal strain. The most notable of these faults are the Ortigalita, Quien Sabe, Nunez, and O'Neill fault systems, in addition to the blind thrust faults associated with the Coast Range–Central Valley geomorphic boundary.

Based on historic seismicity, the Central Valley area may be subject to peak ground accelerations of 1.0 g or greater from nearby earthquakes on the San Andreas fault, as well as segments 8 through 13 of the Great Valley blind thrust faults (CPUC 2001).

III.4.8.1.4 Rialto/Moreno Valley/Devers Area

This transmission corridor extends from Devers Substation near Palm Springs to Rialto in San Bernardino County, which roughly follows the existing Devers–Palo Verde No. 2 corridor.

III.4.8.1.4.1 Regional Physiography

The Rialto/Moreno Valley/Devers Area is near the junction of three major physiographic provinces: the Colorado Desert, the northern edge of the Peninsular Ranges, and the Transverse Ranges. The region is geologically complex with a variety of rock types, faults, and geologic features. The corridor skirts the edges of fault-bounded mountain ranges and crosses desert features including badlands (i.e., barren dissected and eroded hills and gullies formed in semi-arid regions with sparse vegetation and high rates of erosion, usually formed in areas underlain by soft or weakly cemented fine-grained geologic units), sand dunes, alluvial fans and pediments, and broad desert valleys dissected by numerous arroyos and washes. Mountains in the Transverse Ranges are generally east–west trending and in the Plan Area include the San Bernardino, Little San Bernardino, Cottonwood, and Indio hills. The Peninsula Ranges are a northwest trending set of fault-bounded mountains and valleys south of the Transverse Ranges, and in the Plan Area include the northern end of the San Jacinto Mountains and the hills known as the San Timoteo Badlands. The Colorado Desert region lies mostly at a low elevation and consists of desert basins with interspersed north-west trending mountain ranges. In the Colorado Desert, the corridor traverses several valleys including the Chuckwalla and Coachella desert valleys and the Palo Verde Valley, which is a river valley of the Colorado River. The proposed route skirts the

edge of several mountain ranges, including the Chuckwalla, the Orocopia, and the Mecca Hills (CPUC and BLM 2006).

III.4.8.1.4.2 Geology

The Rialto/Moreno Valley/Devers area crosses alluvial plains and valleys, alluvial fans and pediments, mountain passes, and hills. Geologic materials, in chronologic order, include (1) recent sand dune and recent alluvium (Holocene), (2) nonmarine sedimentary deposits (Pleistocene), (3) marine sedimentary rocks (Eocene), (4) granitic rocks (Mesozoic), (5) granitic and metamorphic rocks (Pre-Cenozoic), and (6) gneiss (Precambrian) (CPUC and BLM 2006).

III.4.8.1.4.3 Soils

The soils along the Rialto/Moreno Valley/Devers area route reflect the underlying rock type, the extent of rock weathering, the degree of slope, and the degree of human modification. Most of the route crosses undeveloped land, although small portions traverse agricultural and rural residential lands.

III.4.8.1.4.4 Slopes

Most of the corridor does not cross areas with existing landslides. However, unmapped landslides and areas of localized slope instability may be encountered in the hills (CPUC and BLM 2006).

III.4.8.1.4.5 Faults and Seismicity

The most significant faults in the Rialto/Moreno Valley/Devers area are faults in the San Andreas fault zone. The San Jacinto fault also crosses just east of Moreno Valley. The San Andreas fault zone is a 680-mile active right-lateral strike-slip complex of faults that has historically caused many of the damaging earthquakes in Southern California. The Coachella segment of the San Andreas fault extends from Cajon Pass (near Bakersfield) to the Salton Sea. Historically, the San Andreas Fault has produced "great" earthquakes that have caused significant surface rupture in Southern California, such as the magnitude 8 January 9, 1857 Fort Tejon earthquake. Surface rupture associated with this earthquake originated northwest of Parkfield in Monterey County and propagated southeastward for over 225 miles along the San Andreas Fault to the Cajon Pass northwest of San Bernardino. The historically seismically dormant (at least since 1769) fault may have an average interval of approximately 145 years between major recurrent earthquakes on its southern segment (CPUC and BLM 2006).

III.4.8.1.4.6 Liquefaction

Due to the generally deep water table (with the exception of the area immediately adjacent to the Colorado River), liquefaction is not considered a potential hazard for most of the corridor (CPUC and BLM 2006).

III.4.8.2 Bureau of Land Management Land Use Plan Amendment Decisions Outside Plan Area

The BLM LUPA decisions affecting soils and geology extend to all BLM-administered California Desert Conservation Area (CDCA) lands, including those outside of the Plan Area. Geologic hazards and soils of concern in the portion of the CDCA that is outside of the Plan Area contain similar desert environments to the affected environment within the Plan Area. This area is considered to have a similar set of resources and hazards as those defined in Sections III.4.2, III.4.3, and III.4.4 for the entire Plan Area.

INTENTIONALLY LEFT BLANK

III.5 FLOOD HAZARD, HYDROLOGY, AND DRAINAGE

This section presents the Environmental Setting/Affected Environment for the Desert Renewable Energy Conservation Plan (DRECP or Plan) for Flood Hazard, Hydrology, and Drainage, including for flood hazards, water quality, and the beneficial uses of water and National Wild and Scenic Rivers. It describes the regulations that determine the use and management of water resources in the Plan Area. Its scope is comprehensive since all six of the alternatives analyzed in Volume IV are within the Plan Area. This section additionally describes some environmental settings outside the Plan Area since some actions occurring outside the Plan Area could nevertheless impact aspects of the Plan itself. In addition to various maps and figures integrated into this chapter, Appendix R1.5 includes one additional table supporting this chapter characterizing the range of stream flows within the Plan Area's ephemeral, intermittent, and perennial streams and rivers.

III.5.1 Regulatory Setting

The following summary of federal, state, and local laws and regulations governing the protection of surface water resources in the Plan Area is subsequently followed by a description of flooding, drainage, and hydrologic conditions and processes.

III.5.1.1 Federal

III.5.1.1.1 Clean Water Act

The Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), created a broad national program to protect water quality and regulate discharges of waste and pollutants into waters of the United States (Title 33 United States Code [U.S.C.] Section 1251 et seq.). It provides authority for establishing water quality standards and waste discharge limits for point-source discharges (such as from industrial facilities, sewage treatment plants, and stormwater). The law also prohibits discharges of pollutants without a permit or other authorization and allows authorized states to implement provisions of the CWA in lieu of the federal Environmental Protection Agency (EPA). Key CWA provisions include:

- Section 401 – Water Quality Certification requirements for federally permitted activities (e.g., construction) that may result in discharges to surface waters and wetlands.
- Section 402 – National Pollutant Discharge Elimination System (NPDES) permit program for point source discharges, including stormwater.
- Section 404 – Permit program for controlling discharges of dredge or fill materials into surface waters and wetlands; the U.S. Army Corps of Engineers (USACE)

implements its provisions. Activities in waters of the United States regulated under this program include fill for development, water resource projects (e.g., dams and levees), infrastructure development (e.g., highways, power plants, and renewable energy projects), and mining projects. Section 404 also requires a permit before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt (e.g., certain farming and forestry activities). The basic premise of the program is that no discharge of dredged or fill material may be permitted if a practical, less damaging alternative exists, or if U.S. waters would be significantly degraded. In other words, when applying for a permit, an applicant must demonstrate that steps have been taken to avoid adverse impacts to wetlands, streams, and other aquatic resources; that potential impacts have been minimized; and that compensation will be provided for any remaining unavoidable impacts. For most discharges with only minimal adverse impacts, a general permit may suffice. General permits are issued on a national, regional, or state basis for specific categories of activities. The general permit permitting process eliminates individual review and allows some activities with little or no delay (provided that the general or specific conditions for the general permit are met). For example, minor road activities, utility line backfill, and bedding are routinely granted general permits. Section 404 permits are also subject to CWA Section 401 water quality certification through a Regional Water Quality Control Board (RWQCB). Renewable energy development (including those proposed in accordance with the Plan) would be subject to Section 404 permitting if the project scope includes discharge of dredged or fill material into waters of the U.S.

Because the term Waters of the U.S. is referred to in numerous places in this section, its definition is provided as follows:

1. *All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;*
2. *All interstate waters including interstate wetlands;*
3. *All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:*
   (i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) (From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purposes by industries in interstate commerce;

4. *All impoundments of waters otherwise defined as waters of the United States under this definition;*
5. *Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;*
6. *The territorial sea;*

Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA (40 CFR 230.3(s)).

III.5.1.1.2 Resource Conservation Recovery Act (RCRA)

The Resource Conservation and Recovery Act (RCRA) (42 U.S.C 6901 et seq.) (40 Code of Federal Regulations [CFR] Part 260 et seq.) is a comprehensive body of regulations that empowers the EPA to control the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also provides the framework for managing nonhazardous solid wastes. RCRA is jointly administered in California by the Department of Toxic Substances Control and California RWQCBs.

III.5.1.1.3 Reclamation Reform Act

The Reclamation Reform Act of 1982 mandates that the Bureau of Reclamation (BOR) manage, develop, and protect water and related resources.

III.5.1.1.4 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act of March 10, 1934, authorizes the secretaries of Agriculture and Commerce to assist and cooperate with federal and state agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals, and to study

the effects of domestic sewage, trade wastes, and other pollutants on wildlife. This act also directs the Bureau of Fisheries to use impounded waters for fish-culture stations and migratory-bird resting and nesting areas, and requires consultation with the Bureau of Fisheries before building new dams to protect fish migration. This law additionally requires plans and wildlife surveys to protect wildlife on public lands, and manages the donation of funds or lands to federal agencies.

Amendments to the act, enacted in 1946, require consultation with the U.S. Fish and Wildlife Service (USFWS) and the fish and wildlife agencies of states where the "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted . . . or otherwise controlled or modified" by any agency under a federal permit or license. Consultation is to be undertaken for the purpose of "preventing loss of and damage to wildlife resources." The amendments authorize the transfer of funds to the USFWS to conduct related investigations. Land donated or transferred by a developer as mitigation for wildlife protection is to be either managed directly by or by other agencies or conservation organizations under cooperative agreements with the Secretary of Department of the Interior (DOI). General plans may also transfer project lands to a state for management.

A 1948 amendment authorized use of surplus federal property for wildlife conservation. 1958 amendments recognized the vital contribution of wildlife resources to the nation and required equal consideration and coordination of wildlife conservation with other water resource development programs. These amendments also authorized DOI to designate public fishing areas and to accept donations of lands and funds. The amendments further expanded conditions where diversions or modifications to water bodies would require consultation with USFWS. They also required that permitted lands valuable to the Migratory Bird Management Program be made available to the state agency that controls wildlife resources for management.

III.5.1.1.5 Executive Order 11990 Protection of Wetlands

The basic requirement of Executive Order (EO) 11990 is that federal agencies prohibit construction or management practices that would adversely affect wetlands, unless an agency finds that there is either no practical alternative, or that a proposed action has considered all practical measures to minimize harm to the wetlands. EO 11990 directs all federal agencies to minimize the destruction, loss, or degradation of wetlands. The order also directs agencies to preserve and enhance the natural beneficial values of wetlands in the conduct of the agency's responsibilities for (1) acquiring, managing, and disposing of federal lands and facilities; (2) providing federally undertaken, financed, or assisted construction and improvements; and (3) conducting federal activities and programs affecting land use, including but not limited to water and related land resource planning, regulating, and licensing.

III.5.1.1.6 Executive Order 11988: Floodplain Management

EO 11988 requires federal agencies to avoid, to the extent possible, both long- and short-term adverse impacts from the occupancy and modification of floodplains, and to avoid both direct and indirect support of floodplain development wherever there is a practical alternative. This order states that "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities" for:

- Acquiring, managing, and disposing of federal lands and facilities.
- Providing federally undertaken, financed, or assisted construction and improvements.
- Conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities.

The guidelines address an 8-step process that agencies should carry out as part of their decision-making on projects that could potentially impact a floodplain. The eight steps, summarized below, reflect the decision-making process required in Section 2(a) of EO 11988.

1. Determine if a proposed action is in the base floodplain (an area that has a 1% or greater chance of flooding in any given year).
2. Conduct early public review, including public notice.
3. Identify and evaluate practicable alternatives to locating in the base floodplain, including alternative sites outside the floodplain.
4. Identify impacts of the proposed action.
5. If impacts cannot be avoided, develop measures to minimize impacts and restore and preserve the floodplain, as appropriate.
6. Re-evaluate alternatives.
7. Present the findings and a public explanation.
8. Implement necessary actions.

Among a number of other things, the Interagency Task Force on Floodplain Management clarified development in floodplains and emphasized that agencies should select alternative sites for projects outside floodplains and, where practical, develop measures to mitigate unavoidable impacts.

III.5.1.1.7 Wild and Scenic Rivers Act (16 U.S.C 1271 et seq.)

The Wild and Scenic Rivers Act establishes that certain U.S. rivers and their immediate environments possess such remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other values that they shall be preserved in free-flowing condition and protected for the benefit and enjoyment of present and future generations (16 U.S.C 1271). The act both identifies specific river reaches for designation as wild or scenic and provides criteria for classifying additional river reaches (16 U.S.C 1272). "Wild river areas" are rivers or sections of rivers that are free from impoundments and generally inaccessible except by trail; their watersheds or shorelines are essentially primitive and their waters unpolluted. These environments represent the vestiges of primitive America. "Scenic river areas" are rivers or sections of rivers that are free from impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible by roads in some places. "Recreational river areas" are rivers or sections of rivers that are readily accessible by road or railroad, so may have some development along their shorelines, and may have undergone some impoundment or diversion in the past (16 U.S.C 1273).

The National Wild and Scenic River System was established to protect the environmental values of free-flowing streams from degradation, including from water resources projects. The system is administered jointly by the U.S. Forest Service (USFS), U.S. Department of Agriculture (USDA), National Park Service (NPS), and the DOI, which includes the Bureau of Land Management (BLM). U.S. Army Corps of Engineers (USACE) activities on streams in the system are subject to review by whichever of these agencies is responsible for a specific stream. In all planning for the use and development of water and related land resources, all potential national wild, scenic, and recreational river areas shall receive consideration. All river basin and project plan reports submitted to Congress shall also consider and discuss such areas (16 U.S.C 1276[d]). See Section III.14 BLM Special Designations, Classifications, Allocations, and Lands with Wilderness Characteristics, for more information.

III.5.1.2 State

III.5.1.2.1 California Fish and Game Code, Sections 1600-1616, as Amended

The California Department of Fish and Wildlife (CDFW) regulates activities that would divert or obstruct the natural flow or otherwise substantially change the bed, channel, or bank of any river, stream, or lake, or that would deposit or dispose of debris, waste, or other material where it may pass into any river, stream, or lake that supports fish or wildlife (Fish and Game Code, Section 1602). Although there are several conditions that trigger its authority and how it is acted upon, the Fish and Game Code states that all streams and lakes are subject to this regulation (Section 1600 et seq.). CDFW also has jurisdiction over riparian habitats (e.g., southern willow scrub) that are associated with

watercourses. Any person who proposes a project that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake or use materials from a streambed must formally notify the CDFW before beginning the project (Section 1602). If the CDFW determines that the project may adversely affect existing fish and wildlife resources, a Lake or Streambed Alteration Agreement is required.

III.5.1.2.2 California Fish and Game Code, Sections 5650-5656, as Amended

It is unlawful to deposit in, permit to pass into, or place where it can pass into waters of the state any substance that is deleterious to fish, plant life, mammals, or bird life (Section 5650). . This section does not apply to a discharge or a release that is expressly authorized and in compliance with the terms and conditions of waste discharge requirement pursuant to Section 13263 of the Water Code, or a waiver issued pursuant to subdivision (a) of Section 13269 of the Water Code issued by the State Water Resources Control Board, or a regional water quality control board after a public hearing, or that is expressly authorized pursuant to, and in compliance with, the terms and conditions of a federal permit for which the State Water Resources Control Board or a regional water quality control board has, after a public hearing, issued a water quality certification pursuant to Section 13160 of the Water Code.

III.5.1.2.3 Porter–Cologne Water Quality Control Act, as Amended

The Porter–Cologne Water Quality Control Act was established to protect the water quality and beneficial uses of waters of the state (California Water Code, Division 7, Section 13000 et seq.). The law gives broad authority to the SWRCB and the state's nine RWQCBs to establish water quality standards and discharge prohibitions, issue waste discharge requirements, and implement provisions of the federal CWA. Under the Porter–Cologne Act, "waters of the state" include both surface and groundwater. Any entity or person proposing to discharge waste within any region of the state must file a Report of Waste Discharge with the appropriate regional board. There are two RWQCB hydrologic regions within the Plan Area, including the Lahontan and Colorado River regions. The Lahontan is further divided into north and south basins; the South Basin is within the Plan Area (RWQCB 2005).

The Lahontan and Colorado River RWQCBs have jurisdictions within the Plan Area. Each has a water quality control plan, also referred to as a basin plan. A basin plan establishes water quality standards for both surface water and groundwater. These standards include designated beneficial uses as well as narrative and numerical objectives, which must be both attained and maintained. Under both state and federal law there are additional anti-degradation policies that protect high-quality waters and limit degradation even where water quality exceeds standards.

III.5.1.2.4 Executive Order W-59-93

Executive Order W-59-93, signed by Governor Pete Wilson on August 23, 1993, established state policy guidelines, with two primary goals, for wetlands conservation: to ensure no overall net loss, and to achieve a long-term net gain in the quantity, quality, and permanence of wetland acreage in the state. At this writing, the State Water Board and a technical advisory team are still developing the statewide Wetland and Riparian Protection Policy; it remains in draft form. However, the Lahontan Basin Plan has established a "no net loss" policy for its wetland acreage, function, and value, so the State Water Board is implementing it through its dredge/fill program. The board's discretionary actions and project approvals involving wetlands impacts must still adhere to the standard of "no net loss" during this interim period, ahead of final approval of the policy.

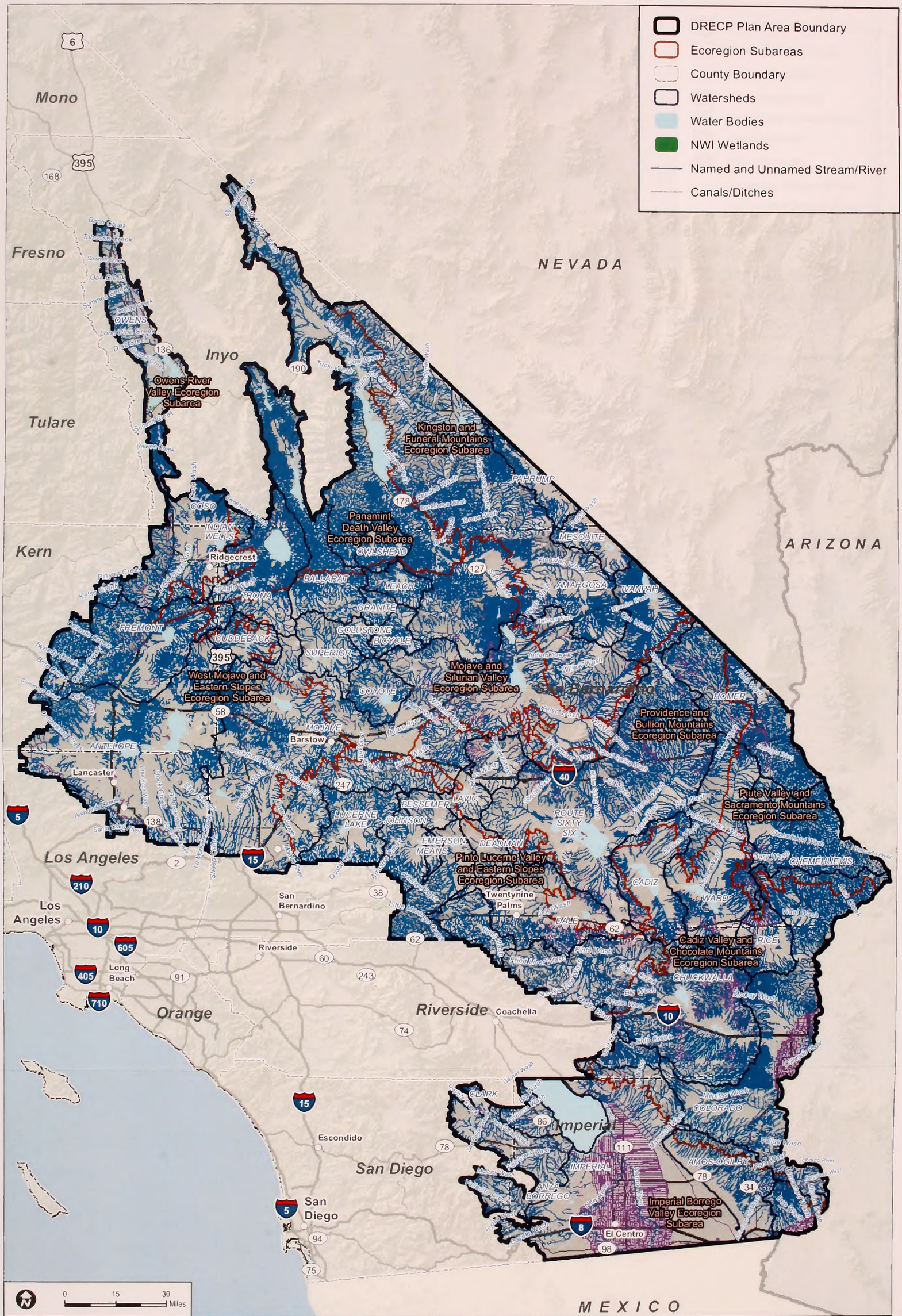
III.5.1.3 Local

III.5.1.3.1 County General Plans and Development Codes

Grading is subject to the terms and conditions of both a county's General Plan and its Development Code. If a proposed site is on federal land, county regulations do not directly apply to the project. However, the federal land manager has the authority to jointly determine, with counties, specific grading and soil erosion standards. If a county grading permit is required by the federal land manager, the grading plan must be completed in compliance with that county's General Plan and Development Code. County development codes may also include provisions for managing stormwater, disposing liquid waste, and extracting groundwater.

III.5.2 Flood Hazard, Hydrology, and Drainage Within the Plan Area

The Plan Area is primarily desert landscape with extremely scarce surface waters and flows. Annual precipitation ranges from approximately 3 inches in the low deserts to approximately 8 inches in the high deserts and desert ranges (USDA 1997). Stream channels are typically ephemeral and formed by flash runoff events; these conditions have created various channel forms including alluvial fans, compound (braided) channels, discontinuous ephemeral (transient or short-lived) channels, and single-thread channels with floodplains (Lichvar, R.W. and S.M. McColley 2008, CDFG 2010). Figure III.5-1 shows all the documented named and unnamed linear and areal surface water resources in the Plan Area. Figure III.5-2 displays only the documented named water bodies (both linear and areal surface water resources) in the Plan Area, including the Salton Sea, Owens Lake, and the Owens, Colorado, Mojave, Alamo, and Amargosa rivers. In the Imperial Valley, surface water is diverted from the Colorado and New rivers, primarily for agricultural use, before draining via canals into the Salton Sea.



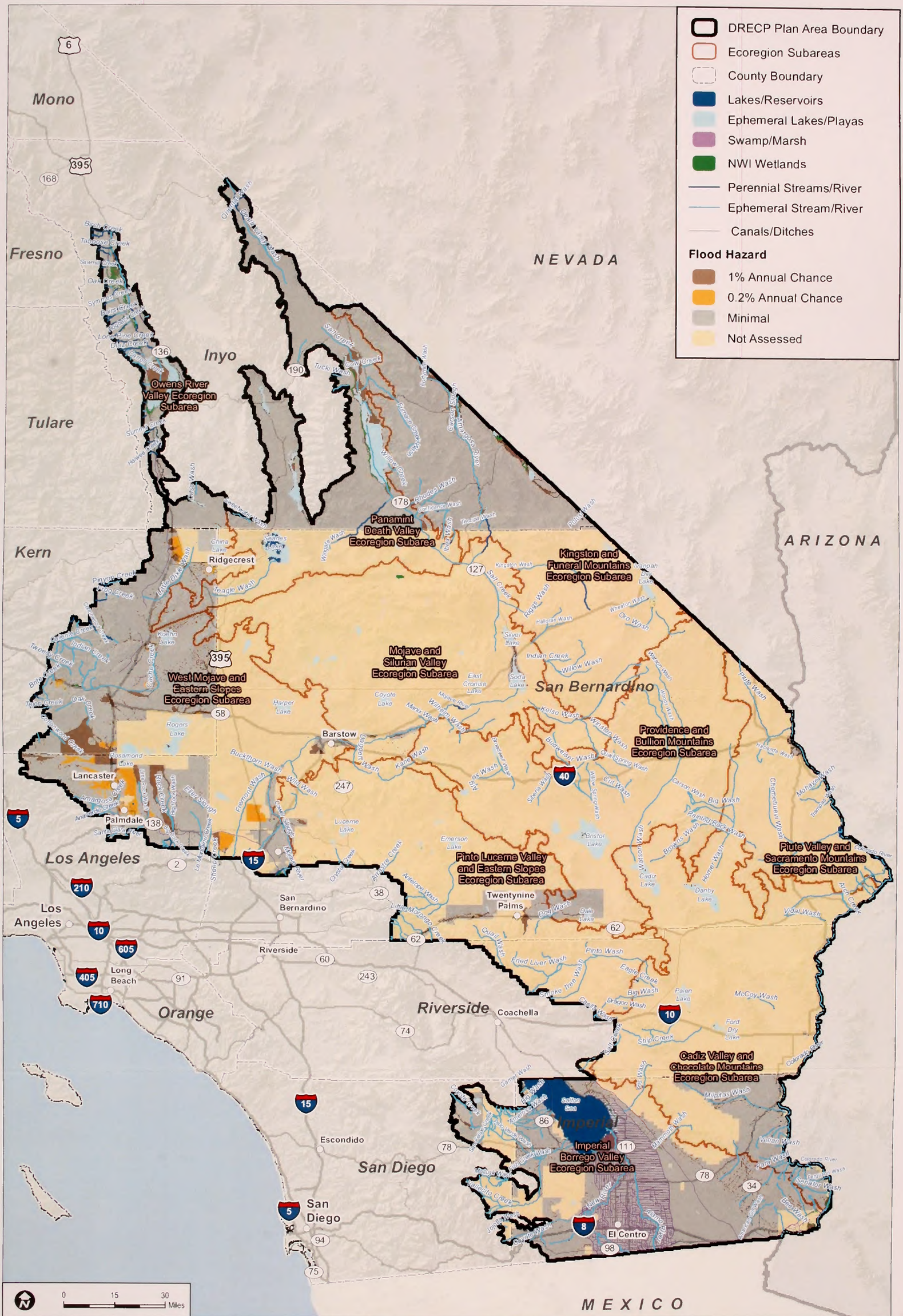
Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); USGS (2011)

FIGURE III.5-1

Linear and Areal Surface Water Resources and Watersheds in the Plan Area

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.5-Hydrology\figIII.5-1.mxd 8/19/2014

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); USGS (2011); FEMA (2012)

FIGURE III.5-2

Named Water Bodies, Wetlands, and Flood Hazard Areas in the Plan Area

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.5-Hydrology\figIII.5-2.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

Linear water resources data evaluated in this environmental impact report/environmental impact statement (EIR/EIS) comes from the National Hydrography Dataset (NHD) developed by the United States Geological Survey (USGS). The NHD is a feature-based, interconnecting database that uniquely identifies the stream segments or reaches that make up the nation's surface water drainage system. NHD linear water resources data include ephemeral streams/rivers, perennial and intermittent streams/rivers, and canals/ditches within the Plan Area (USGS 2010). There may be additional linear water resources on individual project sites. While imperfect, this method does provide relative measures to identify and assess linear surface water features in ecological subareas.

Areal water resources data evaluated in this EIR/EIS comes from National Wetland Inventory (NWI) data developed by the USFWS (USFWS 2014). This data set shows the extent, approximate location, and type of wetlands and deepwater habitats in the conterminous United States. This data delineates the areal extent of wetlands and surface waters (Cowardin et al. 1979). Certain wetland habitats are excluded from the NWI mapping program because of limitations of the aerial imagery used primarily to detect them. The USFWS also excludes certain types of "farmed wetlands," as defined by the Food Security Act, or lands that do not fit the NWI definition (Cowardin et al. 1979). The areal water resources data, also referred to as areal surface water bodies, includes ephemeral lakes/playas, perennial lakes/reservoirs, NWI wetlands (as compiled by USFWS), and swamps/marshes.

Spring data from the NHD that is evaluated in the EIR/EIS was developed by USGS (USGS 2010). The locations of springs that are currently identified within the ecoregion subareas are shown in Figure III.5-3. There are numerous springs and seeps that support wetland habitats; they are generally found along mountain fronts, in canyons, and in areas of shallow bedrock. These springs and seeps are also associated with faulting and shallow groundwater. Wetland and marsh habitats are additionally found around the margins and fringes of playa lakes.

Sparse vegetation, lack of soil, high erosion rates, localized runoff, and reduced stream flow from evaporation and seepage create networks of closely spaced channels and high drainage densities in the Plan Area. Tributaries to larger washes and waterways tend to be smaller and more numerous than in more temperate regions (Bull L.J. and M.J. Kirkby 2002). In their lower reaches, streams drain into lowland valleys that contain numerous dry lakes and terminal basins (playas). In the Lahontan region, all surface waters drain internally. The terminal basins in the region are therefore alkaline or saline, and many are important migratory bird areas (e.g., recently re-watered portions of the Owens Dry Lakebed, and the Piute Springs north of Lancaster). Shallow overland, or sheet flow, characterizes drainage patterns in these areas of flat topography.

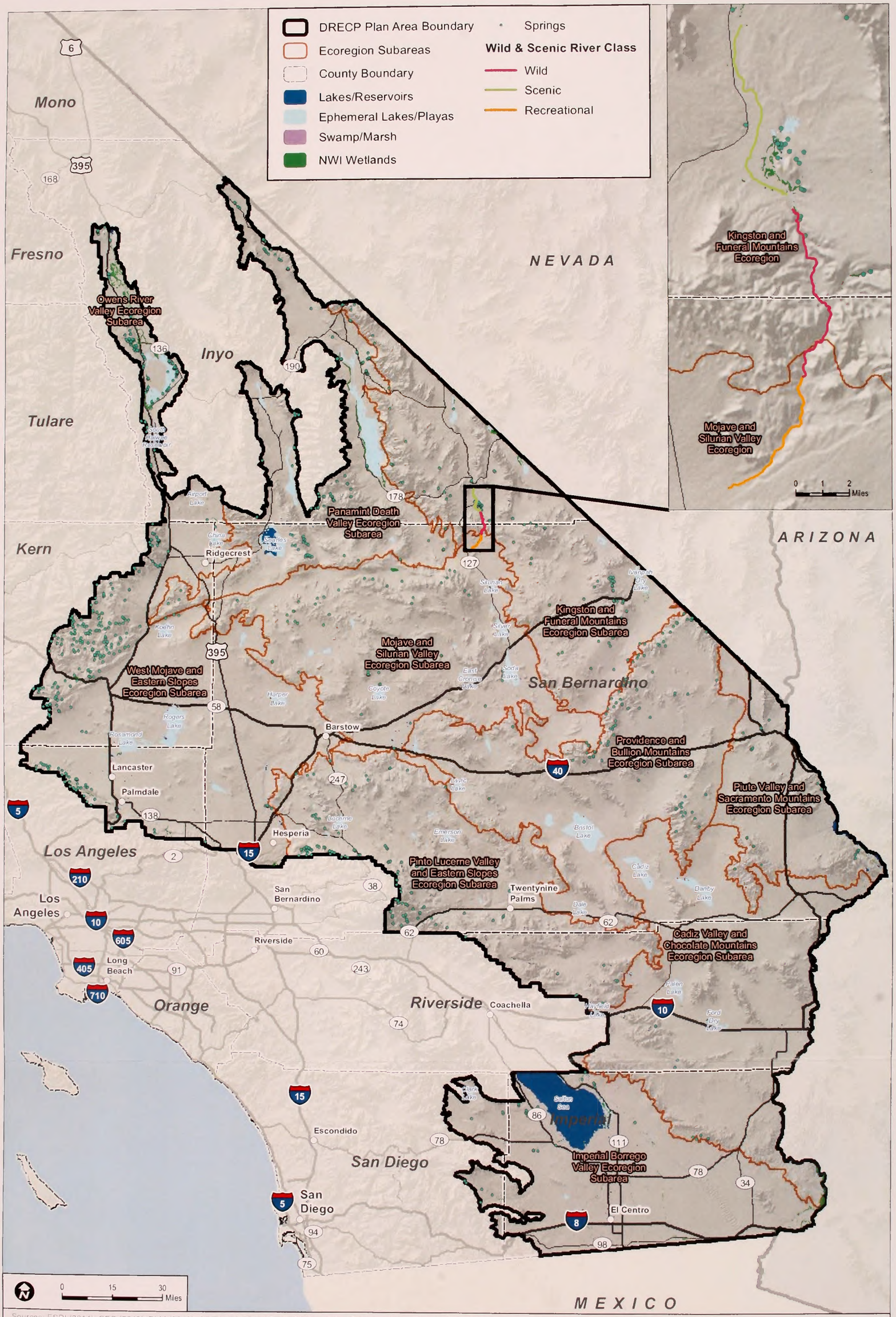
Highly variable, sudden, and unpredictable flooding is common in the Plan Area. This flooding is generally from winter storms (both rainfall and rapid mountain snowpack melt), tropical storms out of the southern Pacific Ocean, and summer thunderstorms. Summer storms pose a greater threat of flooding than winter storms due to their higher rainfall intensity, which can create a saturated surface that substantially reduces seepage and increases runoff and its associated sediment transport.

III.5.2.1 FEMA Flood Hazards

Floodplain maps are generally prepared by the Federal Emergency Management Agency (FEMA) in populated regions with the statistical 0.2% or 1% chance of annual flooding (known as 500-year or 100-year flood events). Because it is sparsely populated, much of the Plan Area has not been evaluated for potential flood hazards, as shown in Figure III.5-2 (FEMA 2010). Furthermore, highly variable and largely undocumented drainage patterns, such as those characteristic of alluvial fans, make analyzing flood hazards in the Plan Area a significant challenge (Alluvial Fan Task Force 2010). FEMA-designated flood hazards are further discussed by ecoregion subarea in Section III.5.6.

III.5.2.2 Water Quality in the Plan Area

Water quality conditions in the Plan Area vary based on both physical characteristics and land use in areas surrounding water bodies. The CWA, as implemented by the SWRCB, protects water quality primarily through the NPDES program and the Porter Cologne Act, which relies upon issuance of Waste Discharge Requirements (WDRs). Several water-quality requirements can apply to project construction near water bodies, including (1) enrollment under Construction General Stormwater permits, (2) compliance with municipal stormwater permit requirements, (3) enrollment under General Dewatering permits, (4) CWA Section 404 permits from the U.S. Army Corps of Engineers for discharges of dredge or fill material into waters of the U.S. (and accompanying CWA Section 401 Water Quality Certification, issued by Water Boards for federal licenses or permits) (5) submission of reports of waste discharge and obtaining WDRs , and (6) securing Lake and Streambed Alteration agreements. In addition, a Storm Water Pollution Prevention Plan could be required to address both the construction and operation phases of a project. CWA only pertains to projects that either impact or discharge to waters of the U.S.. When there is discharge to state waters that are not also waters of the U.S. (generally meaning waters that do not convey interstate or do not contribute to interstate commerce) the regional board has the discretion to issue waste discharge requirements pursuant to the Porter Cologne Water Quality Act. Water quality is discussed in more detail in Section III.5.5.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); USGS (2011); National Wild and Scenic Rivers System (2011)

FIGURE III.5-3

Springs and Wild and Scenic Rivers in the Plan Area

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.5-Hydrology\figIII.5-3.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

III.5.3 Wild and Scenic Rivers Within the Plan Area

The Amargosa River, within the Plan Area, was designated as wild and scenic on March 30, 2009 (Figure III.5-3). It includes reaches defined as wild (7.9 miles), scenic (12.1 miles) and recreational (6.3 miles), for a total of 26.3 miles. These reaches are managed by BLM. The BLM is currently preparing a stream management plan for designated sections of the Amargosa River. They are:

- From the northern boundary of Section 7, Township 21 North, Range 7 East to 100 feet upstream of the Tecopa Hot Springs Road crossing.
- From 100 feet downstream of the Tecopa Hot Springs Road crossing to 100 feet upstream of the Old Spanish Trail Highway crossing near Tecopa.
- From the northern boundary of Section 16, Township 20 North, Range 7 East to 100 feet upstream of the Dumont Dunes Access Road crossing in Section 32, Township 19 North, Range 7 East.
- From 100 feet downstream of the Dumont Dunes Access Road for the next 1.4 miles.

For more information, see Section III.14 BLM Special Designations, Classifications, Allocations, and Lands with Wilderness Characteristics.

III.5.4 Hydrologic Regions, Basins and Sub-Basins Within the Plan Area

The Plan Area falls within two hydrologic regions of the state: South Lahontan and the Colorado River. The two regions are divided into hydrologic units, which are also referred to as watersheds. The watersheds are further divided into hydrologic areas, which in some cases directly correspond to the groundwater basins; otherwise, the groundwater basins fall within the watersheds of their own boundaries. For a description of the physical features of the watersheds, please see Section III.6 Groundwater, Water Supply, and Water Quality.

III.5.4.1 Characterization of Perennial, Intermittent, and Ephemeral Streams

Most surface water streams within the Plan Area are ephemeral, meaning their flow is occasional in the normally dry washes of this arid region. Flow comes from significant precipitation events, typically thunderstorms, which exceed the infiltration rate capacities of the watershed soils and produce runoff. Perennial rivers and streams typically have water-storage components, such as on the Colorado River, and normally produce continuous flows to meet downstream demands for water supply and environmental

protection. Intermittent rivers and streams flow in response to more frequent periods of rainfall or snow melt events and typically flow seasonally in winter and spring.

Ephemeral and intermittent rivers and streams can also be episodic. Important hydrologic and geomorphic attributes of episodic rivers and streams include:

- Highly localized and extremely variable ephemeral and intermittent flow.
- Flood magnitudes much larger (as a multiple of average flow) than conventional humid-climate streams.
- Strong interactions with shallow groundwater, notably rapid infiltration resulting in decreased downstream flow.
- High-volume episodic movement of sediment.
- Unsuitability for application of most hydraulic modeling.
- Transient forms that confound determinations of active versus earlier stream processes and conventional notions of stable and unstable channel form.

Episodic streams provide numerous ecosystem services including watershed and landscape hydrologic connections, water supply protection and water-quality filtering, wildlife habitat and movement/migration corridors, sediment transport, storage and deposition, groundwater recharge and discharge, vegetation community support, and nutrient cycling and movement. Additionally, these streams interact with adjacent drier upland areas to support critical life stages and contribute to overall regional biodiversity. These systems provide primary habitat, predator protection, movement corridors, migration stop-over sites, breeding and nesting sites, shade, food sources, and water in temporary or permanent pools for many species (SCCWRP 2011).

Table III.5-1 compares flood characteristics for various stream types. Banked rivers are basically the land, including its vegetation, that confines or otherwise defines the outermost boundary of a stream or river when its waters rise to their highest level of confinement. Ephemeral streams are typically within an alluvial fan, respond to thunderstorms of short duration, have flows of short duration (hours), and reach peak stage and flow within hours. Ephemeral stream channels within alluvial fans are more likely than perennial streams to move laterally over time. Perennial and intermittent streams are typically more defined by bed and bank river channels, respond to longer-duration winter storms with longer-duration flows (weeks), and reach their peak stage and flow within hours or days, depending upon the storm. Perennial and intermittent streams normally do not exceed their defined river channels; flooding is primarily contained within their channels.

Table III.5-1
Comparison of Flood Characteristics for Alluvial Fans and Banked Rivers

Characteristic	Alluvial Fans (Ephemeral Streams)	Banked Rivers/Headwaters (Perennial and Intermittent Streams)
Time to Peak	Hours	Hours or Days
Duration of Flood	Hours	Weeks
Area Flooded	Small	Small
Drainage Area	Small	Medium or Large
Characteristic Source	Thunderstorm	Winter & Snow Melt
High Sediment Load	Yes	No
Human-made Levees	Rare	Rare

Source: FloodSAFE 2010

III.5.4.2 Streamflows for Perennial, Intermittent, and Ephemeral Streams

Table QR1.5-1, in Appendix QR1, describes the range of stream flows within ephemeral, intermittent, and perennial streams and rivers in the Plan Area: in general, the larger the watershed area the higher the stream flows. Other factors do, however, influence the flow rate produced as runoff from storms and snowmelt. These include the elevation of the watershed, local climate conditions, soil properties, ground slope, and vegetation. Another variable affecting stream flows (summarized in Table RQR1.5-1 and presented in Appendix QR1) is the data collection period; more representative data is collected over longer periods, which tend to capture a greater range and potentially higher maximum historic discharge. Most of the records for ephemeral streams are for limited historical periods, typically 3 to 10 years, and do not warrant the expense of continuous-recording gaging stations. With respect to published data from USGS for stream-flow gages within the Plan Area, Table QR1.5-1 (in Appendix QR1) shows historic instantaneous peaks, their dates, and maximum and minimum mean daily discharges, expressed in cubic feet per second (cfs). See Figure III.5-4 for the location of stream gages within the Plan Area.

III.5.4.2.1 Ephemeral Streams

An example of a typical ephemeral stream is the Fortynine Palms Creek near Twentynine Palms (See Table 3.5-2). The instantaneous peak discharge of 1,240 cfs recorded at this site on August 7, 1963, corresponds to a daily mean discharge of 60 cfs. The magnitude of increase from the daily mean discharge to the instantaneous peak discharge illustrates how quickly an ephemeral stream can rise to an extreme flash flood condition, then fall to a much more moderate condition within 24 hours. A further illustration of extreme variability in stream flow happened on August 7, 1963, when the stream discharge would have had to have been significantly less than 60 cfs for part of the same day in order for the

daily mean flow to also be 60 cfs. Therefore, the extreme rise to 1,240 cfs and subsequent fall to a moderate flow within only a few hours suggests very intense rainfall, such as from a thunderstorm. As an indication of the variability in the rate and duration in precipitation and thus runoff events within the same drainage area for Fortynine Palms Creek, the historic instantaneous peak discharge on August 7, 1963, does not correspond with the historic maximum daily mean discharge of 69 cfs, which occurred on October 18, 1963 (USGS 2012). This suggests that the intensity or rate of rainfall was less on October 18, 1963, but that the rain lasted for a longer period of time compared with the August 7 event.

III.5.4.2.2 Intermittent Rivers and Streams

Intermittent seasonal stream flows, typically during winter and spring, include the upper Mojave River, the lower portion of the Amargosa Wild and Scenic River, and several mountain-outflow channels along the western edge of the Plan Area. The Mojave River near Hodge, California, for example, is an intermittent river with a relatively large drainage area of 1,091 square miles compared with the typically significantly smaller drainage areas of ephemeral streams within the DRECP. Streamflow in the Mojave River near Hodge has a historic instantaneous peak discharge of 12,700 cfs, a historic maximum mean daily discharge of 9,430 cfs, and a historic minimum mean daily discharge of 0 cfs (USGS 2012).

III.5.4.2.3 Perennial Rivers and Streams

The most prominent perennial river within the Plan Area is the Colorado River; its headwaters begin at about 10,000 feet elevation in the Rocky Mountains of Colorado. The Colorado River flows southwest for 1,470 miles to the Gulf of California (Sea of Cortez) in Mexico. It is the international boundary for 17 miles between Arizona and Mexico. The Colorado River is the nation's fifth longest river as 1,360 miles of its route is within the U.S.. It drains a large portion of the North American continent and covers 242,000 square miles in the U.S. and 3,000 square miles in Mexico. The Colorado River and its tributaries drain southwestern Wyoming and western Colorado, parts of Utah, Nevada, New Mexico, and California, and almost all of Arizona. Based on daily mean discharge in the Colorado River below Imperial Dam, from 1960 to 2011 (see Table 3.5-2), there has always been flow from the Colorado. Other than in a few extreme events, the discharge ranges from about 220 to 3,000 cfs, and is regulated by upstream storage reservoirs (USGS 2012).

The lower Colorado River separates two deserts: the Mojave and Colorado/Sonoran on the California (western) side and the Sonoran on the Arizona (eastern) side. South of the Mojave Desert the Salton Basin, a large structural depression 235 feet below sea level, extends 150 miles northwest from the head of the Gulf of California. The southern desert includes the Colorado to the west side of the Plan Area and the Sonoran to the east; they are separated by the Chocolate Mountains.



Sources: ESRI (2014); CEC (2013); BLM (2013); CDFW (2013); USFWS (2013); USGS (2011)

FIGURE III.5-4

Stream Gages in the Plan Area

M:\JOBS4\6287\common_gis\EIR_Figures_Spring_2014\Vol_III\III.5-Hydrology\figIII.5-4.mxd 8/19/2014

INTENTIONALLY LEFT BLANK

There are two locations on the Mojave River where groundwater is forced to the surface by geologic conditions: the "Narrows" in Victorville, and Afton Canyon east of Barstow. Surface flows are perennial and support extensive wetland and riparian habitats.

III.5.4.2.4 Salton Sea

The Salton Sea is the largest lake in California. Although it has been formed many times in geologic history as part of the Colorado River Delta, the Salton Sea was most recently formed in 1905 when floodwaters caused a levee break on the Colorado River near Yuma, and its waters drained into the Salton Basin. The Salton Sea fluctuates in size and capacity, but is currently about 35 miles long, 15 miles wide, occupies 376 square miles, and contains about 7.5 million acre-feet of water. Since the 1905 break threatened agriculture in the Imperial Valley and a major railroad route, the levee was repaired in 1907. Because of its location in the Colorado Desert ecosystem, which has average annual precipitation of fewer than 3 inches per year, the Salton Sea receives minimal inflow from rain. Nearly the entire (90%) inflow to the Salton Sea is agricultural runoff from the Imperial, Coachella, and Mexicali valleys. This inflow carries nutrients, including phosphates and nitrates, which support limited aquatic life. The inflow also carries abundant salt. The Salton Sea salinity level is currently 44 parts per thousand, compared with 35 parts per thousand for the Pacific Ocean.

The Salton Sea's unique feature as a shallow, closed basin makes it vulnerable to both increases or reductions in inflows, which can in turn dramatically change its elevation. Rising lake levels could cause flooding in tribal reservations, wildlife refuge lands, seaside dwellings, marinas, and boat facilities. Salton Sea water levels are threatened by:

- Transfer of water from the Imperial Valley to San Diego.
- Reduction of California's Colorado River use from the October 2003 Quantification Settlement Agreement (QSA).
- Possible reclamation of New River water by Mexico.
- Increased evaporation from the Salton Sea's proposed restoration (related to desalinization from solar evaporation ponds).

The proposed transfer of 300,000 acre-feet (related to the QSA water transfers and other reductions) have reduced water supplies for irrigation in the Imperial and Coachella valleys and reduced irrigation drainage that previously contributed to inflow to the Salton Sea. If these inflows are not replaced, Salton Sea water levels could drop an estimated 16 feet or more, exposing almost 70 square miles of sediments. This could cause air quality problems through blowing dust, seaside homes could be stranded far from shore, and concentrations of salts and nutrients could greatly accelerate. Federal,

state, and local agencies have studied options for restoration, but so far no firm plans have been developed.

As background, the 2003 QSA enabled California to implement Colorado River water conservation and voluntary agriculture-to-urban water transfer programs, which reduced the state's water demand to its 4.4 million acre-foot entitlement (SDCWA 2013). It also provided a restoration path for the environmentally sensitive Salton Sea. For more information on the QSA, see III.6.1.1.6 Colorado River Water Accounting.

III.5.5 Protecting the Water Quality and Beneficial Uses of Plan Area Waters

Water quality standards "consist of a designated use or uses for the Waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the CWA" (40 CFR 131.3[i]). Water quality standards must also include an anti-degradation policy to protect high-quality waters (40 CFR 131.6.). California has adopted both federal anti-degradation policies (40 CFR 131.12) in addition to its own policy (State Board Resolution 68-16). Section 13241 of the Water Code states that "each regional board shall establish water quality objectives in water quality control plans as in its judgment will ensure the reasonable protection of beneficial uses and the prevention of nuisance..." Section 13241 of the Water Code also describes factors to be considered in establishing water quality objectives. Beneficial uses and water quality objectives to protect those beneficial uses are to be established for all waters of the state, both surface water (including wetlands) and groundwater.

III.5.5.1 Beneficial Uses

Table III.5-2 identifies the beneficial uses of surface water and groundwater, managed by regional boards, that apply within the Plan Area.

Table III.5-2
RWQCB Basin Plan Beneficial Uses

Beneficial Use Designation	Description
AGR – Agricultural Supply	Beneficial uses of waters used for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, and support of vegetation for range grazing.
AQUA – Aquaculture	Beneficial uses of waters used for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, and harvesting of aquatic plants and animals for human consumption or bait purposes.

Table III.5-2
RWQCB Basin Plan Beneficial Uses

Beneficial Use Designation	Description
BIOL – Preservation of Biological Habitats of Special Significance.	Beneficial uses of waters that support designated areas or habitats, such as established refuges, parks, sanctuaries, ecological reserves, and Areas of Special Biological Significance, where the preservation and enhancement of natural resources requires special protection.
COLD – Cold Freshwater Habitat	Beneficial uses of waters that support cold water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
COMM – Commercial and Sportfishing	Beneficial uses of waters used for commercial or recreational collection of fish or other organisms including, but not limited to, uses involving organisms intended for human consumption.
FLD – Flood Peak Attenuation/Flood Water Storage	Beneficial uses of riparian wetlands in floodplain areas and other wetlands that receive natural surface drainage and buffer its passage to receiving waters.
FRSH – Freshwater Replenishment	Beneficial uses of waters used for natural or artificial maintenance of surface water quantity or quality (for example, salinity).
GWR – Groundwater Recharge	Beneficial uses of waters used for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
IND – Industrial Service Supply	Beneficial uses of waters used for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, geothermal energy production, hydraulic conveyance, gravel washing, fire protection, and oil well re-pressurization.
MIGR – Migration of Aquatic Organisms	Beneficial uses of waters that support habitats necessary for migration, acclimatization between fresh and salt water, or temporary activities by aquatic organisms, such as anadromous fish.
MUN – Municipal and Domestic Supply	Beneficial uses of waters used for community, military, or individual water supply systems including, but not limited to, drinking water supply.
NAV – Navigation	Beneficial uses of waters used for shipping, travel, or other transportation by private, military, or commercial vessels.
POW – Hydropower Generation	Beneficial uses of waters used for hydroelectric power generation.
PRO – Industrial Process Supply	Beneficial uses of waters used for industrial activities that depend primarily on water quality.
RARE – Rare, Threatened, or Endangered Species	Beneficial uses of waters that support habitat necessary for the survival and successful maintenance of plant or animal species established under state and/or federal law as rare, threatened or endangered.

Table III.5-2
RWQCB Basin Plan Beneficial Uses

Beneficial Use Designation	Description
REC-1, Water Contact Recreation	Beneficial uses of waters used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, and use of natural hot springs.
REC-2, Noncontact Water Recreation	Beneficial uses of waters used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities.
SAL – Inland Saline Water Habitat	Beneficial uses of waters that support inland saline water ecosystems including, but not limited to, preservation and enhancement of aquatic saline habitats, vegetation, fish, and wildlife, including invertebrates.
SPWN – Spawning, Reproduction, and Development	Beneficial uses of waters that support high quality aquatic habitat necessary for reproduction and early development of fish and wildlife.
WARM – Warm Freshwater Habitat.	Beneficial uses of waters that support warm water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
WILD – Wildlife Habitat	Beneficial uses of waters that support wildlife habitats including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl.
WQE – Water Quality Enhancement	Beneficial uses of waters that support natural enhancement or improvement of water quality in or downstream of a water body including, but not limited to, erosion control, filtration and purification of naturally occurring water pollutants, streambank stabilization, maintenance of channel integrity, and siltation control.

Source: RWQCB 2005

The Basin Plan gives equal weight to every beneficial use of both surface water and groundwater. Surface water includes playas and ephemeral washes. For example, referring to the preceding table, desert washes provide beneficial functions and values including groundwater recharge, flood peak attenuation, floodwater storage, and wildlife habitat (RWQCB 2005). Beneficial uses for groundwater include municipal and domestic supply, agricultural supply, industrial service supply, freshwater replenishment, aquaculture, and wildlife habitat.

III.5.5.2 Water Quality Objectives and Effluent Limitations

Ambient or receiving (waters receiving a discharge) water quality objectives are distinct from "effluent limitations" or "discharge standards," though both are typically included in state and federal waste-discharge permits (Water Code Section 13050[h]). The Porter–Cologne Water Quality Control Act defines "water quality objectives" as the allowable "limits or levels of water quality constituents or characteristics established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area." Water quality objectives are therefore intended to protect the public health and welfare and to maintain or enhance water quality in relation to the existing and/or potential beneficial uses of the water. The objectives, when compared with historical and future water quality data, also provide the basis for detecting trends toward both the degradation and the enhancement of basin waters.

Effluent limitations serve as the primary mechanism in National Pollutant Discharge Elimination System (NPDES) and WDRs for controlling discharges of pollutants to receiving waters. Effluent limitations consider both the technology available to control pollutants (e.g., technology-based effluent limits) and limits that protect the water quality standards for the receiving water (e.g., water quality-based effluent limits). Effluent-limit guidelines and standards have been established by the EPA for more than 50 different industrial categories, including for steam electric power plants. The regional boards prescribe effluent limitations when issuing NPDES permits for both industrial purposes and as part of the waste discharge requirements of publicly owned treatment works. Effluent limitations apply to waste discharges that may affect the state's water quality.

III.5.5.2.1 Methodology for Establishing Water Quality Objectives

Water quality objectives are either numerical or narrative. Narrative and numerical water quality objectives together define the upper concentrations and other limits that a RWQCB considers safe for the public and the environment. The general methodology used to establish water quality objectives first designates beneficial water uses, then quantifies water quality parameters necessary to protect the most vulnerable (sensitive) beneficial uses. To comply with State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," also known as the "Non-Degradation Objective," water quality objectives may be established at levels higher than necessary to protect the most vulnerable beneficial uses. In establishing water quality objectives, factors other than for designated beneficial uses and the Non-Degradation Objective are also considered. These factors include environmental and economic considerations specific to each hydrologic unit, the need to develop and use recycled water, and the level of water quality that could be achieved through coordinated control of all the factors affecting water quality in an area (Water Code Section 13241). Controllable water quality

factors are actions, conditions, or circumstances from human activities that may influence the quality of the waters of the state, and that may be reasonably controlled.

The Basin Plan specifies beneficial uses and water quality objectives for all surface waters for each hydrologic unit and sub-unit drainage feature. The designated beneficial uses and water quality objectives for groundwater within the DRECP ecoregion subareas are discussed in Section III.6.

III.5.6 Flood Hazard, Hydrology, and Drainage Areas Within Plan Area by Ecoregion Subarea

The existing conditions of surface water resources and flood potential within each ecoregion subarea are characterized and/or quantified by:

- Surface water linear features and their drainage patterns – as indicated by length (in miles) for ephemeral streams/rivers, perennial and intermittent streams/rivers, and canals/ditches.
- Surface water areal features – as indicated by area (in acres) of nonlinear water bodies including ephemeral lakes/playas, perennial lakes/reservoirs, NWI wetlands (National Wetlands Inventory as compiled by USFWS), and swamps/marshes.
- Springs – as indicated by the number of springs currently identified within the ecoregion subareas.
- Flood hazard – as indicated by floodplain maps prepared by FEMA in populated regions where floods have a 1% statistical chance of occurring each year (known as 100-year flood events). Because it is sparsely populated, much of the Plan Area has not been evaluated by FEMA for potential flood hazards, so results are inconclusive.

See Section III.4 Geology and Soils, for soil data and potential susceptibility to wind and water erosion.

III.5.6.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea

Surface water resources in the Cadiz Valley and Chocolate Mountains ecoregion subarea include 12,079 miles of linear surface water features, 71,034 acres of surface water bodies, and 12 springs. The flood hazard potential has not been assessed in the northern and central portions of the ecoregion subarea within San Bernardino and Riverside counties, and is generally minimal in the southern portion, in Imperial County.

III.5.6.2 Imperial Borrego Valley Ecoregion Subarea

Surface water resources in the Imperial Borrego Valley ecoregion subarea include 7,307 miles of linear surface water features, 420,565 acres of surface water bodies, and 34 springs. The potential for flood hazard is either minimal or has not been assessed in both the western and eastern portions of the ecoregion subarea. The central portion draining into the Salton Sea is predominantly within the 100-year floodplain (having a 1% annual chance of a flood of a determined significant magnitude).

III.5.6.3 Kingston and Funeral Mountains Ecoregion Subarea

The unique feature within the Kingston and Funeral Mountains ecoregion subarea is the Amargosa River, a portion of which is designated wild and scenic, shown in Figure III.5-3. Surface water resources include 9,742 miles of linear surface water features, 36,854 acres of surface water bodies, and 119 springs. The potential for flood hazard is minimal in the northern portion of the ecoregion subarea within Inyo County, and has not been assessed for the southern portion in San Bernardino County.

III.5.6.4 Mojave and Silurian Valley Ecoregion Subarea

The Mojave and Silurian Valley ecoregion subarea includes the southern portion of the Amargosa River, designated as wild and scenic, shown in Figure III.5-3. The surface water resources include 8,542 miles of linear surface water features, 91,711 acres of surface water bodies, and 63 springs. The potential for flood hazard has not been assessed, with the exception of several areas along the Mojave River within the 100-year floodplain.

III.5.6.5 Owens River Valley Ecoregion Subarea

Surface water resources in the Owens River Valley ecoregion subarea include 1,493 miles of linear surface water features, 121,205 acres of surface water bodies, and 130 springs. The potential for flood hazard is primarily minimal with the exception of several areas within the 100-year floodplain.

III.5.6.6 Panamint Death Valley Ecoregion Subarea

Surface water resources in the eastern portion of the Panamint Death Valley ecoregion subarea include 10,089 miles of linear surface water features, 275,309 acres of surface water bodies, and 172 springs. The potential for flood hazard is primarily minimal in the northern portion of the ecoregion subarea within Inyo County, and has not been assessed for the southern portion in San Bernardino County. A few small areas around Kelso Wash are within the 100-year floodplain.

III.5.6.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea

Surface water resources in the Pinto Lucerne Valley and Eastern Slopes ecoregion subarea include 6,291 miles of linear surface water features, 27,832 acres of surface water bodies, and 144 springs. The potential for flood hazard has not been assessed for most of the ecoregion subarea, with the exception of a few areas along State Route (SR) 62 near Twentynine Palms, which either have minimal risk or are within the 100-year floodplain.

III.5.6.8 Piute Valley and Sacramento Mountains Ecoregion Subarea

Surface water resources in the Piute Valley and Sacramento Mountains ecoregion subarea include 4,818 miles of linear surface water features, 7,045 acres of surface water bodies, and 26 springs. The potential for flood hazard has not been assessed.

III.5.6.9 Providence and Bullion Mountains Ecoregion Subarea

Surface water resources in the Providence and Bullion Mountains ecoregion subarea include 7,933 miles of linear surface water features, 55,415 acres of surface water bodies, and 80 springs. The potential for flood hazard has not been assessed.

III.5.6.10 West Mojave and Eastern Slopes Ecoregion Subarea

Surface water resources in the West Mojave and Eastern Slopes ecoregion subarea include 11,270 miles of linear surface water features, 138,067 acres of surface water bodies, and 294 springs. The potential for flood hazard is primarily minimal west of U.S. Highway 395, with the exception of some areas in the vicinities of Lancaster and Palmdale, which are within the 100-year floodplain. The potential for flood hazard east U.S. Highway 395 has not been assessed.

III.5.7 BLM LUPA Plan Area

The BLM Land Use Plan Amendment (LUPA) lands include designated wild and scenic river areas adjacent to (west and east of) but excluding the corridor established for protection of the Armargosa River. With respect to BLM LUPA lands, most areas have not been assessed by FEMA for flood hazard, with the exception of the following areas, which have been classified as minimal flood hazard areas:

1. West of Highway 395 in eastern Kern County
2. Western and southern portions of the Owens Valley in Inyo County
3. The Ballarat watershed located in Inyo County (east of Owens Valley)

4. Portions of the Amargosa, Pahrump, and Mesquite watersheds in the northeastern portion of the BLM LUPA Area in Inyo County
5. Most of the BLM LUPA Area in Imperial County

III.5.8 NCCP Plan Area

The affected environment for the NCCP is the same as that described above for the entire Plan Area. While there are Department of Defense (DOD) lands and tribal lands within the Plan boundaries, the Plan does not analyze effects on these lands so they are not included in the description of the affected environment.

III.5.9 General Conservation Plan (GCP)

The affected environment for the GCP includes a subset of lands covered by Plan-wide analysis and the Natural Community Conservation Plan (NCCP). In addition to excluding DOD and tribal lands, the GCP lands exclude all other federal lands (e.g., BLM-administered public lands, and national parks).

GCP-designated lands are primarily in the Owens River Valley, West Mojave and Eastern Slopes, Pinto Lucerne Valley and Eastern Slopes, Cadiz Valley and Chocolate Mountains, and the Imperial Borrego Valley ecoregion subareas. For other ecoregion subareas with very few GCP-designated lands, the description of the Environmental Setting/Affected Environment for the GCP lands is generally as described above in Section III.5.6.

III.5.9.1 Cadiz Valley and Chocolate Mountains Ecoregion Subarea

The GCP lands in the Cadiz Valley and Chocolate Mountains ecoregion subarea do not include any rivers with wild and scenic designation. The potential for flood hazard has not been assessed for GCP lands in Riverside County and is minimal for GCP lands in Imperial County.

III.5.9.2 Imperial Borrego Valley Ecoregion Subarea

The GCP lands in the Imperial Borrego Valley ecoregion subarea do not include any rivers with wild and scenic designation. The potential for flood hazard is minimal for GCP lands in this ecoregion subarea.

III.5.9.3 Kingston and Funeral Mountains Ecoregion Subarea

The unique feature in the Kingston and Funeral Mountains ecoregion subarea is the Amargosa River, a portion of which is designated wild and scenic, as shown in Figure III.5-3. The surface water resources include 9,742 miles of linear surface water features, 36,854

acres of surface water bodies, and 119 springs. The potential for flood hazard is minimal in the northern portion of the ecoregion subarea within Inyo County, and has not been assessed for the southern portion in San Bernardino County.

III.5.9.4 Mojave and Silurian Valley Ecoregion Subarea

The Mojave and Silurian Valley ecoregion subarea includes the southern portion of the Amargosa River, which is designated as wild and scenic, as shown in Figure III.5-3. The surface water resources include 8,542 miles of linear surface water features, 91,711 acres of surface water bodies, and 63 springs. The potential for flood hazard has not been assessed, with the exception of several areas along the Mojave River within the 100-year floodplain.

III.5.9.5 Owens River Valley Ecoregion Subarea

The GCP lands in the Owens River Valley ecoregion subarea do not include any rivers with wild and scenic designation. The potential for flood hazard is minimal, with the exception of several areas within the 100-year floodplain.

III.5.9.6 Panamint Death Valley Ecoregion Subarea

Surface water resources in the eastern portion of the Panamint Death Valley ecoregion subarea include 10,089 miles of linear surface water features, 275,309 acres of surface water bodies, and 172 springs. The potential for flood hazard is minimal in the northern portion of the ecoregion subarea within Inyo County, and has not been assessed for the southern portion in San Bernardino County. A few small areas around Kelso Wash are within the 100-year floodplain.

III.5.9.7 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea

The GCP lands in the Pinto Lucerne Valley and Eastern Slopes ecoregion subarea do not include any rivers with wild and scenic designation. The potential for flood hazard has not been assessed for most of the GCP lands, with the exception of a few areas along State Route (SR) 62 near Twentynine Palms, which have either minimal risk or are within the 100-year floodplain (1% annual chance of a flood of a determined significant magnitude).

III.5.9.8 Piute Valley and Sacramento Mountains Ecoregion Subarea

Surface water resources in the Piute Valley and Sacramento Mountains ecoregion subarea include 4,818 miles of linear surface water features, 7,045 acres of surface water bodies, and 26 springs. The potential for flood hazard has not been assessed.

III.5.9.9 Providence and Bullion Mountains Ecoregion Subarea

Surface water resources in the Providence and Bullion Mountains ecoregion subarea include 7,933 miles of linear surface water features, 55,415 acres of surface water bodies, and 80 springs. The potential for flood hazard has not been assessed.

III.5.9.10 West Mojave and Eastern Slopes Ecoregion Subarea

The GCP lands in the West Mojave and Eastern Slopes ecoregion subarea do not include any rivers with wild and scenic designation. The potential for flood hazard is minimal west of U.S. Highway 395 and has not been assessed to the east of the highway, with the exception of some areas in the vicinities of Lancaster and Palmdale that are within the 100-year and 500-year floodplains.

III.5.10 Flood Hazard, Hydrology, and Drainage Outside of the Plan Area

III.5.10.1 Flood Hazard, Hydrology, and Drainage – Transmission Outside of Plan Area

The regulatory setting related to groundwater, water supply, and water quality outside of the Plan Area includes the laws, ordinances, and regulations described in Section III.1.1, Regulatory Setting.

Table III.5-3 (Stream Crossings Outside of Plan Area) lists the streams crossed by the transmission corridors outside the Plan Area. Hundreds of unnamed washes also cross the corridors. In arid areas stream channels are generally ephemeral in the foothills and become less defined washes along the desert floor. The flat topography and lack of defined channels on the desert floor can lead to unconfined overland flow during storms. Streams in the mountainous regions of Southern California are generally dry in the summer months (though perennial flows may occur), especially in larger streams. Many of the drainages in urban regions have been lined with concrete to support flood control, or have been otherwise altered to conform to the developed landscape. Crossings that would create a discharge of dredged or fill material would likely require either a CWA Section 404 Permit and Section 401 Water Quality Certification if it was a water of the U.S., or Waste Discharge Requirements if a water of the state. If the project spanned several regional boards, the State Board would issue either a WDR permit or 401 Certification.

RWQCB Basin Plan beneficial uses could apply to watercourses in transmission corridors outside the Plan Area, depending on location. The beneficial uses presented in Table III.5 3 (RWQCB Basin Plan Beneficial Uses) also apply to the surface water resources in the

transmission corridors outside the Plan Area. Table III.5-3 (Stream Crossings Outside of Plan Area) identifies waterways outside their respective areas by transmission corridors.

Table III.5-3
Stream Crossings Outside of Plan Area

San Diego Area		
Alpine Creek	Hauser Creek	San Diego River
Beeler Creek	La Posta Creek	San Vicente Creek
Boulder Creek	Lawson Creek	Sweetwater River
Boundary Creek	Little Potrero Creek	Taylor Creek
Carrizo Creek	Los Coches Creek	Tule Creek
Chocolate Creek	Miller Creek	Viejas Creek
Cottonwood Creek	Myer Creek	Walker Creek
Coyote Wash	Poway Creek	Wilson Creek
Grapevine Creek		
Los Angeles Area		
Alder Creek	Josephine Creek	Rubio Wash
Alhambra Wash	Little Dalton Wash	Rush Creek
Arroyo Seco	Little Rock Wash	San Dimas Wash
Big Dalton Wash	Live Oak Wash	San Gabriel River
Big Tujunga Creek	Lucas Creek	Santa Anita Wash
Charter Oak Creek	Manzanita Wash	Santa Clara River
Clear Creek	Marshall Creek	South Fork Lytle Creek
Compton Creek	Middle Fork Lytle Creek	Thompson Wash
Cucamonga Creek	Middle Fork Mill Creek	Trail Fork
Day Canyon Wash	Mill Creek	West Fork Alder Creek
Day Creek	Mission Creek	West Fork San Gabriel River
Deer Canyon Wash	Monte Cristo Creek	South Fork Santa Clara River
Deer Creek	Mule Fork	*Real Wash**
East Br Big Dalton Wash	North Fork Lytle Creek	*Piru Creek*
East Etiwanda Creek	North Fork Mill Creek	*Mule Fork*
Eaton Wash	Oro Grande Wash	*Gold Creek*
Fall Creek	Rio Hondo	*Little Tujunga Creek*
Fox Creek		
North Palm Springs–Riverside Area		
Box Canyon Wash	Pinkham Wash	Yucaipa Creek
Garnet Wash	Potrero Creek	Warm Creek
Hathaway Creek	Red Butte Wash	*Sheep Creek**
Jenson Creek	San Gorgonio River	*Santiago Creek*

Table III.5-3
Stream Crossings Outside of Plan Area

North Palm Springs–Riverside Area		
Little San Gorgonio Creek	San Jacinto River	*Santa Ana River*
Lytle Creek	San Timoteo Wash	*Little Morongo Creek*
Montgomery Creek	Smith Creek	*Handy Creek*
Morongo Wash	Super Creek	*Dry Morongo Creek*
Noble Creek	Twin Pines Creek	*Chino Creek*
One Horse Creek	Whitewater River	*Big Morongo Creek*
Central Valley Area		
Arkansas Creek	Comanche Creek	Los Gatos Creek
Arroyo Bifido	Corral Hollow Creek	Martin Creek
Arroyo Ciervo	Cottonwood Creek	Martinez Creek
Arroyo Degollado	Crow Creek	Mustang Creek
Arroyo Doblegado	Del Puerto Creek	Orestimba Creek
Arroyo Estrecho	Domengine Creek	Ortigalita Creek
Arroyo Finito	Garzas Creek	Panoche Creek
Arroyo Hondo	Goose Lake Slough	Patterson Run
Arroyo Largo	Hospital Creek	Piedra Azul Creek
Arroyo Murado	Ingram Creek	Quinto Creek
Arroyo Pino	Kern River Channel	Salado Creek
Arroyo Robador	Laguna Seca Creek	Salt Creek
Arroyo Torcido	Little Panoche Creek	Tejon Creek
Arroyo Vadoso	Little Salado Creek	Zapato Chino Creek
Cantua Creek	Lone Tree Creek	*Tumco Wash**
Chanac Creek	Los Banos Creek	*Indian Wash*

* Waterways indicated in *italic* are crossed by alternatives to the Preferred Project.

III.5.10.2 BLM LUPA

The BLM LUPA decisions affecting flood hazard, hydrology, and drainage also extend to all BLM-administered CDCA lands, including those outside the Plan Area. The Environmental Setting/Affected Environment for CDCA lands outside the Plan Area is generally similar to that described above in Section III.5.6.

INTENTIONALLY LEFT BLANK

III.6 GROUNDWATER, WATER SUPPLY, AND WATER QUALITY

The Regulatory Setting summarizes the federal, state, and local laws and regulations applicable to the use and management of water resources in the Desert Renewable Energy Conservation Plan (DRECP or Plan) Plan Area. A description of groundwater, water supply, and hydrologic conditions and processes, as they relate to the Plan, follows the Regulatory Setting.

III.6.1 Regulatory Setting

III.6.1.1 Federal

III.6.1.1.1 Clean Water Act

The Clean Water Act (CWA33 United States Code [U.S.C.] 1251 et seq.) requires states to set standards to protect water quality, including regulation of stormwater and wastewater discharges during facility construction and operation (Section 402). The CWA also establishes regulations and standards to protect wetlands and navigable waters (Section 404). The U.S. Army Corps of Engineers issues Section 404 permits for discharges of dredge or fill material. These permits cover discharges to U.S. waters, and are subject to Section 401 water quality federal license and permit certification. Section 401 certification is required if U.S. surface waters, including perennial and ephemeral drainages, streams, washes, ponds, pools, and wetlands, could be adversely impacted. The U.S. Army Corps of Engineers and a Regional Water Quality Control Board (RWQCB) can require that impacts to these waters be quantified and mitigated. Whenever a discharge is made to U.S. waters the RWQCB issues a National Pollution Discharge Elimination System (NPDES) and Waste Discharge Requirement (WDR) permit. If a discharge is only to state waters, such as to groundwater, only a WDR permit is required.

III.6.1.1.2 Resource Conservation Recovery Act

The Resource Conservation and Recovery Act (RCRA) (42 U.S.C. 6901 et seq.; 40 Code of Federal Regulation [CFR] Part 260 et seq.) grants the Environmental Protection Agency (EPA) the authority to control the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also provides the framework for managing nonhazardous solid wastes. RCRA is administered jointly in California by the Department of Toxic Substances Control and RWQCBs.

III.6.1.1.3 Reclamation Reform Act

Under the Reclamation Reform Act of 1982 (Public Law 97–2933; 96 Stat. 1261), the U.S. Bureau of Reclamation (USBR) manages, develops, and protects U.S. waters and related resources.

III.6.1.1.4 Safe Drinking Water Act

The Safe Drinking Water Act (42 U.S.C. 300[f] et seq.) establishes requirements and provisions for the Underground Injection Control Program. One way this law safeguards the public health is by protecting underground drinking water sources from injection well contamination. General provisions for the Underground Injection Control Program (including state primacy for the program) are described in sections 1421–1426. The California Division of Oil, Gas, and Geothermal Resources has the authority to issue federal Class V Underground Injection Control permits for geothermal fluid injections.

III.6.1.1.5 Environmental Protection Agency Sole Source Aquifer Protection Program

The EPA Sole Source Aquifer Protection Program, established in Section 14245(e) of the Safe Drinking Water Act, requires that EPA review proposed federally assisted projects to determine their potential for aquifer contamination.

III.6.1.1.6 Colorado River Water Accounting Surface

Colorado River diversions are governed by the Colorado River Compact, signed in 1922, and by associated documents subsequently affirmed by the United States Supreme Court in Arizona v. California (547 U.S. 150 2006) (Consolidated Decree). For decades, California consumed the river's yield surplus from other western states that underspent their own allotments. Water demand grew outside California, and in 2001 the U.S. Department of the Interior (DOI) issued updated rules that restrict California to its yield allocation of 4.4 million acre-feet/year. The four most senior California diverters are Palo Verde Irrigation District, Yuma Project, Imperial Irrigation District, and Coachella Valley Water District. These districts are collectively entitled to 3.85 million acre-feet/year of California's 4.4 million acre-feet/year total yield (87.5 percent).

The USBR monitors and accounts for all water use in areas with diversions from the Lower Colorado River. In the 1990s, the U.S. Geological Survey, in cooperation with the USBR, developed an accounting surface method to further account for Colorado River water withdrawn by groundwater pumping wells. This accounting surface includes all areas where groundwater pumping "will yield water that will be replaced by water from the river" (Wilson and Owen-Joyce 1994, Owen-Joyce et al. 2000, Wiele et al. 2008). The accounting surface therefore now identifies geographic areas containing water-bearing sediment deposits that are hydraulically connected to the Colorado River, as well as the extrapolated depth of "river water" within those areas. In 2008, the USGS mapped the accounting surface using a physically-based groundwater flow model (Wiele et al. 2008). While the USBR has not yet published a proposed rule incorporating the accounting surface, it is considered to be

the best available science on this issue. Significantly, even though water above the accounting surface is not considered river water, it is still considered tributary to the river.

III.6.1.1.7 Wild and Scenic Rivers Act

The 1968 National Wild and Scenic River Act (Public Law 90–542; 16 U.S.C. 1271 et seq.) protects the environmental values of free-flowing streams from degrading activities, including those from water resources projects. It establishes this policy for certain U.S. rivers that, together with their immediate environments, possess outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. These rivers are to be preserved in their free-flowing conditions for the benefit and enjoyment of present and future generations (16 U.S.C 1271).

The National Wild and Scenic River System is administered jointly by the U.S. Forest Service (USFS), the U.S. Department of Agriculture (USDA), the National Parks Service (NPS), and DOI. All development plans affecting water use and related land resources must consider potential impacts to national wild, scenic, and recreational river areas. River basin and project plan reports submitted to Congress shall also consider these potential impacts (16 U.S.C. 1276[d]).

III.6.1.1.8 Bureau of Land Management (BLM) Bishop Field Office Resource Management Plan

The BLM administers a large portion of the public lands in the Plan Area (44% of the total). BLM lands are managed according to the California Desert Conservation Area (CDCA) Plan, originally adopted in 1980. Localized BLM Resource Management Plans (RMPs) further define regulations and policies for CDCA land use. Examples related to groundwater include the following standard operating procedures and policies in the Bishop Field Office RMP:

- Existing water quality and beneficial uses shall be inventoried prior to authorizing any project with potential to impact water quality. Best management practices and appropriate mitigation will be identified during project level environmental review and applied during project implementation to ensure compliance with the federal anti-degradation policy.
- Activities involving discharge of dredged or fill materials into Waters of the U.S. or their adjacent wetlands will be reviewed for compliance with Section 404 of the CWA.
- Groundwater pumping is prohibited where it interferes with valid existing water uses, desired plant community goals, or other resource condition objectives.

III.6.1.2 State

III.6.1.2.1 California Constitution, Article X, Section 2

California Constitution, Article X, Section 2 states that water resources of the state be put to beneficial use to the fullest extent possible and prohibits water waste, unreasonable use, or unreasonable methods of use.

III.6.1.2.2 Porter–Cologne Water Quality Control Act

California's Porter–Cologne Water Quality Control Act, enacted in 1969 (Cal. Stats. 1969, Ch. 482), provides the legal basis for water quality regulation in California. It predates the CWA and regulates discharges to state waters. This law requires a Report of Waste Discharge for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. Waters of the state are more than just waters of the United States and include, for example, groundwater and some surface waters not meeting the definition of waters of the United States. In addition, it prohibits waste discharges or the creation of water-related "nuisances," which are more broadly defined than the CWA definition of "pollutant." Discharges under the Porter–Cologne Act are permitted by waste discharge requirements and may be required even when the discharge is already permitted or exempt under the CWA.

III.6.1.2.3 California Water Code

The California Water Code stipulates that the primary interest of the people of the State of California is the conservation of all available water resources, and requires that the maximum re-use of reclaimed water offset potable resource use (sections 451 and 13550 et seq.). The code divides California water rights into three categories: surface water, percolating groundwater, and subterranean streams that flow through known and definite channels (Section 1200). The code defines waters of the state (Section 13050) and requires regional basin plans. These plans define water quality objectives that protect the beneficial uses of surface water and groundwater and provide comprehensive water quality planning (sections 13240, 13241, 13242, and 13243). The code further includes many other provisions that (1) define reasonable and beneficial water uses; (2) set standards for well drilling; (3) require that water supplies for large new developments be demonstrated in advance; (4) require Storm Water Pollution Prevention plans; and (5) address other aspects of water resources, water rights, and water management.

III.6.1.2.4 State Water Resources Control Board and Regional Water Quality Control Boards

The State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCB) are the principal state agencies responsible for water quality coordination and control. They jointly establish water quality standards including water quality objectives, beneficial uses, and an anti-degradation policy. They also regulate waste discharges to ensure compliance with water quality standards. These water quality standards are described in detail in their applicable RWQCB basin plans. States designate beneficial uses for all water body segments, then set criteria to protect those uses. Water quality standards developed for particular water segments are therefore based on designated uses, and vary depending on those uses. In addition, each state identifies waters that fail to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that those waters are indeed impaired, the CWA requires establishment of total maximum daily loads. Total maximum daily loads specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

SWRCB Resolution No. 68-16 (Anti-degradation Policy) mandates that the state's high-quality waters be maintained until it can be demonstrated that any change in quality (1) will be consistent with maximum benefit to the people of the state, (2) will not unreasonably affect present and anticipated beneficial uses, and (3) will not result in water quality that violates adopted policies. Any activity that produces or may produce waste, increases the volume or concentration of waste, or discharges or proposes to discharge to existing high-quality waters must meet waste discharge requirements (WDRs). WDRs are intended to promote the best practicable treatment or control of the discharge to ensure that pollution or a nuisance will not occur, and to maintain the highest water quality with maximum benefit to the people of California.

SWRCB No. 88-63 (Sources of Drinking Water Policy) requires that all groundwater and surface water of the state be suitable for municipal or domestic water supply, with the exception of waters that state or regional boards certify under specific conditions.

III.6.1.3 Local

III.6.1.3.1 County General Plans

The Plan Area encompasses parts of seven counties: Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, and San Diego counties. Counties have primary authority over land use in privately held unincorporated areas, which could include most sites suitable for large solar projects. The primary authority over federally owned lands lies with the federal agency charged with managing the land. General plans contain goals, objectives, and policies

related to many aspects of water resources and commonly include preserving water quality and availability and protecting open space, habitat areas, groundwater recharge areas, and agricultural areas. Land use zoning is mapped, and large projects usually require conditional use permits.

III.6.1.3.2 County Ordinances

Counties adopt ordinances to regulate land use activities and to implement goals and objectives in their General Plans. While each county has its own ordinances, their scope and content is often similar. Relevant regulated activities commonly include septic system siting and construction, well permitting, well construction and destruction procedures, grading, stormwater management, development in floodplains, and groundwater exports.

III.6.1.3.3 Municipal Ordinances

There are 46 incorporated areas that together cover approximately 2.5% of the Plan Area. Utility-scale solar projects generally require large tracts of undeveloped land, and are less likely to be sited within these municipal jurisdictional boundaries. If these locations are proposed, their respective municipal ordinances and regulations would apply either in lieu of or in addition to county ordinances.

III.6.1.3.4 Local Water and Wastewater Agencies

Local agencies that manage water and wastewater within the Plan Area include Mojave Water Agency, Los Angeles County Sanitation District, Imperial Irrigation District, and Palo Verde Irrigation District. Some agencies, including Mojave Water Agency, Hi-Desert Water District, and Tehachapi–Cummings County Water District, serve as Watermasters that implement the terms of basin adjudication (see Section III.6.2.1 Adjudicated Basins). Some agencies manage the distribution and use of surface water supplies, including State Water Project contractors in the adjudicated basins and Colorado River users (Imperial and Palo Verde irrigation districts). The County Sanitation District of Los Angeles County establishes recycled water use procedures within the county.

III.6.2 Groundwater Resources within the Plan Area

The California Department of Water Resources (CDWR) has mapped 113 groundwater basins in the Plan Area (Figure III.6-1) and published their descriptions in Bulletin 118 (Department of Water Resources 2003); Table III.6-1 lists the names and acreages for each

of the basins.[1] The amount of groundwater use and the availability of groundwater information vary among basins. The existing level of groundwater use, available water-level data, and documented historical groundwater consumption affect basin conditions and their sensitivity to future development. The information provided from Bulletin 118, the CASGEM Program, and various other reports and maps are summarized in Table III-6-1.

III.6.2.1 Adjudicated Basins

Chronic declines in groundwater levels and storage can prompt local users to initiate basin adjudication, a legal settlement that quantifies water rights for all groundwater and surface water users in a basin. It has two implications for renewable energy projects. First, in adjudicated basins the perennial groundwater yield is essentially fully allocated to existing users. Second, despite that limitation, adjudication often enables the transfer of water use allowances among users within a basin. By this means, an energy project could conceivably purchase sufficient yield from other users to operate a project. Such transfers are less likely to generate objections in adjudicated basins because the sum of all allowances is managed within the range of the perennial yield.

[1] CDWR defines a groundwater basin as an aquifer or an aquifer system that is bounded laterally and at depth by features that affect groundwater flow: rocks or sediments of lower permeability, geologic structures (such as a fault), or hydrologic features (such as a stream, lake, ocean, or groundwater divide). Hydrologic basins, or watersheds, often include areas outside the groundwater basins that can contribute water to the basin (such as runoff from the watershed that percolates into the basin). In groundwater basins where many studies have been completed and the basin has been operated for a number of years, the basin boundaries are well defined. Even in these basins, however, there are unknowns and the boundaries may change as more information is collected and evaluated. Many of the CDWR subbasin boundaries were developed or modified with public input, but little physical data. Because they should not be considered precise boundaries, a detailed local study that defines actual groundwater-flow paths is required to determine whether a specific area lies within a groundwater basin boundary.

Table III.6-1
California Department of Water Resources Basins in the DRECP
(See Figure III.6-1 for basin locations.)

CDWR Basin Number	Groundwater Basin Name	Table Basin Area[1] (acres)	Estimated Groundwater Use[2] (ac-ft/acre)	Designated Overdraft Conditions	Adjudicated Basin	Water Level and Water Budget Conditions
7-16	Ames Valley	108,000	<0.03	No Designation	No	A preliminary water budget indicates that the basin is close to balance under average conditions.[3] The pumping rates during 1990-1996 resulted in an observed rapid decrease in groundwater elevations.[4]
7-34	Amos Valley	130,000	<0.03	No Designation	No	Water level declines reported up to 29 ft. during 1979-2000.[5]
7-44	Antelope Valley	1,010,000	0.03-0.20	Yes[2]	Yes (pending)[2]	Water level declines, storage depletion, and subsidence reported.[5] Extractions likely exceed natural recharge.[2]
7-37	Arroyo Seco Valley	256,000	<0.03	No Designation	No	Uncertain.
6-26	Avawatz Valley	28,000	<0.03	No Designation	No	Uncertain.
7-15	Bessemer Valley	39,000	<0.03	No Designation	No	Uncertain.
6-25	Bicycle Valley	89,000	<0.03	No Designation	No	Long term hydrographs indicate that groundwater withdrawals have resulted in a water-table decline as much as 70 ft. since late 1960.[6]
7-24	Borrego Valley	152,000	0.03-0.20	Yes[2]	No	Overdraft of 15,000 acre-feet per year.[31]
7-8	Bristol Valley	497,000	<0.03	No Designation	No	Uncertain.

Table III.6-1
California Department of Water Resources Basins in the DRECP
(See Figure III.6-1 for basin locations.)

CDWR Basin Number	Groundwater Basin Name	Table Basin Area[1] (acres)	Estimated Groundwater Use[2] (ac-ft/acre)	Designated Overdraft Conditions	Adjudicated Basin	Water Level and Water Budget Conditions
5-80	Brite Valley	3,000	0.03-0.20	Yes[2]	Yes[27]	Safe Yield is 500 acre feet annually.[32]
7-32	Broadwell Valley	92,000	<0.03	No Designation	No	Uncertain.
6-76	Brown Mountain Valley	22,000	<0.03	No Designation	No	Uncertain.
6-81	Butte Valley	9,000	<0.03	No Designation	No	Uncertain.
7-7	Cadiz Valley	270,000	<0.03	No Designation	No	A proposed aquifer storage and recovery project (the Cadiz Valley Water Project) is a significant consideration for groundwater resources.[30]
7-90	Cady Fault Area	8,000	<0.03	No Designation	No	Uncertain.
6-79	California Valley	58,000	<0.03	No Designation	No	Uncertain.
7-41	Calzona Valley	81,000	<0.03	No Designation	No	Uncertain.
6-38	Caves Canyon Valley	73,000	<0.03	No Designation	No	If large quantities of water were pumped from the basin, water levels would decline and might stop the flow out of the basin.[8]
7-43	Chemehuevi Valley	272,000	<0.03	No Designation	No	Uncertain.
7-32	Chocolate Valley	129,000	<0.03	No Designation	No	Uncertain.

Table III.6-1
California Department of Water Resources Basins in the DRECP
(See Figure III.6-1 for basin locations.)

CDWR Basin Number	Groundwater Basin Name	Table Basin Area[1] (acres)	Estimated Groundwater Use[2] (ac-ft/acre)	Designated Overdraft Conditions	Adjudicated Basin	Water Level and Water Budget Conditions
7-5	Chuckwalla Valley	602,000	<0.03	No Designation	No	Water levels stable in central and eastern basin; water levels decline of 50 ft. starting in 1980 around the Desert Center.[5]
7-21.01	Coachella Valley–Indio	297,000	0.61-0.8	No Designation	No	Uncertain.
7-21.02	Coachella Valley–Mission Creek	48,000	0.21-0.40	Yes[9]	No	Supplemental recharge (artificial recharge) is needed to reduce annual and cumulative overdraft.[9]
7-11	Copper Mountain Valley	30,000	<0.03	No Designation	No	Uncertain.
6-55	Coso Valley	26,000	<0.03	No Designation	No	Uncertain.
6-37	Coyote Lake Valley	88,000	<0.03	No Designation	No	Declining water levels.[5]
7-29	Coyote Wells Valley	146,000	<0.03	Yes[5]	No	Overdraft is characterized by the sustained gw level declines in the past 30 years.[33]
6-35	Cronise Valley	126,000	<0.03	No Designation	No	Uncertain.
6-50	Cuddeback Valley	95,000	<0.03	No Designation	No	Not enough available data to provide groundwater budget estimates.[10]
5-27	Cummings Valley	10,000	0.41-0.60	Yes[2]	Yes[27]	Safe Yield is 4,090 acre feet annually.[32]
7-9	Dale Valley	212,000	<0.03	No Designation	No	Groundwater extraction seems very high for a basin with documented water quality issues.[4] USGS data shows declining water levels.[2]

Table III.6-1
California Department of Water Resources Basins in the DRECP
(See Figure III.6-1 for basin locations.)

CDWR Basin Number	Groundwater Basin Name	Table Basin Area[1] (acres)	Estimated Groundwater Use[2] (ac-ft/acre)	Designated Overdraft Conditions	Adjudicated Basin	Water Level and Water Budget Conditions
7-13.01	Deadman Valley–Deadman Lake	89,000	<0.03	No Designation	No	Uncertain.
7-13.02	Deadman Valley–Surprise Spring	29,000	<0.03	No Designation	No	Between 1952 and 1996 water levels stayed constant in the west and declined by 115 ft. in the east.[5]
6-18	Death Valley	920,000	<0.03	No Designation	No	Uncertain.
6-78	Denning Spring Valley	7,000	<0.03	No Designation	No	Uncertain.
7-33	East Salton Sea	195,000	<0.03	No Designation	No	Steady WL decline from 1963-2000 (20 to 40 ft. bls).[5]
6-43	El Mirage Valley	76,000	0.03-0.20	No Designation	Yes[27]	In the past 15 years the water levels have only fluctuated slightly with a slight trend downwards. The amount of groundwater input to the system must be close to the output or possibly less.[11]
7-2	Fenner Valley	452,000	<0.03	No Designation	No	Water supplies are adequate for present needs. However, large-scale pumping would result in the lowering of the water table and a reduction of the ground water in storage.[12]
6-46	Fremont Valley	335,000	<0.03	No Designation	No	Groundwater pumping for agriculture in the Fremont Valley Basin resulted in historical groundwater overdraft.[29] Groundwater use has since declined.

Table III.6-1
California Department of Water Resources Basins in the DRECP
(See Figure III.6-1 for basin locations.)

CDWR Basin Number	Groundwater Basin Name	Table Basin Area[1] (acres)	Estimated Groundwater Use[2] (ac-ft/acre)	Designated Overdraft Conditions	Adjudicated Basin	Water Level and Water Budget Conditions
6-85	Gold Valley	3,000	<0.03	No Designation	No	Uncertain.
6-48	Goldstone Valley	28,000	<0.03	No Designation	No	Uncertain.
6-77	Grass Valley	10,000	<0.03	No Designation	No	Uncertain.
6-84	Greenwater Valley	60,000	<0.03	No Designation	No	Uncertain.
6-47	Harper Valley	409,000	0.03-0.20	No Designation	No	During 1980 water levels rebounded but within the past couple years water levels have declined as much as 100 ft.[13]
6-74	Harrisburg Flats	25,000	<0.03	No Designation	No	Uncertain.
7-53	Hexie Mountain Area	11,000	<0.03	No Designation	No	Uncertain.
7-30	Imperial Valley	958,000	<0.03	No Designation	No	The decline in the water table in East Mesa began in 1980 and stabilized in the early 1990s.[14]
6-54	Indian Wells Valley	382,000	0.03-0.20	Yes[2]	No	Water quality issues with respect to overdraft and mixing of aquifers.[2]
7-50	Iron Ridge Area	5,000	<0.03	No Designation	No	Uncertain.
6-30	Ivanpah Valley	198,000	<0.03	No Designation	No	Uncertain.

Table III.6-1
California Department of Water Resources Basins in the DRECP
(See Figure III.6-1 for basin locations.)

CDWR Basin Number	Groundwater Basin Name	Table Basin Area[1] (acres)	Estimated Groundwater Use[2] (ac-ft/acre)	Designated Overdraft Conditions	Adjudicated Basin	Water Level and Water Budget Conditions
7-18.01	Johnson Valley–Soggy Lake	77,000	<0.03	No Designation	No	Uncertain.
7-18.02	Johnson Valley–Upper Johnson Valley	35,000	<0.03	No Designation	No	Stable water levels and a preliminary water balance for the basin indicate that the basin is in balance with significant subsurface outflows and losses to evaporation at dry lakes.[3,15]
7-62	Joshua Tree	27,000	0.03-0.20	No Designation	No	Declining water levels since 1973.[5]
6-89	Kane Wash Area	6,000	0.03-0.20	No Designation	No	Not enough data to provide an estimate of groundwater budget.[10]
6-69	Kelso Lander Valley	11,000	<0.03	No Designation	No	Uncertain.
6-31	Kelso Valley	255,000	<0.03	No Designation	No	Water levels have declined by 100 ft. since pumping began in early 1950s.[10]
5-25	Kern River Valley	79,000	<0.03	No Designation	No	Uncertain.
7-1	Lanfair Valley	156,000	<0.03	No Designation	No	Random fluctuations are seen in the groundwater levels over the approximately 1950s-1980s period, i.e., no obvious patterns of decline or rise.[16]

Table III.6-1
California Department of Water Resources Basins in the DRECP
(See Figure III.6-1 for basin locations.)

CDWR Basin Number	Groundwater Basin Name	Table Basin Area[1] (acres)	Estimated Groundwater Use[2] (ac-ft/acre)	Designated Overdraft Conditions	Adjudicated Basin	Water Level and Water Budget Conditions
6-36.02	Langford Valley–Irwin	10,000	<0.03	No Designation	No	From the early 1980s until mid-1990s, increased pumpage caused water levels to decline about 15 ft. Since 1993 water levels have been recovering in response to decreased pumpage and artificial recharge of wastewater.[17]
6-36.01	Langford Valley–Langford Well Lake	19,000	<0.03	No Designation	No	WL contours for 1995, 2000, 2005 and 2010 conditions show that groundwater withdrawals have resulted in a cone of depression in the central part of the basin. WLs have declined by 50 ft.[18]
7-14	Lavic Valley	102,000	<0.03	No Designation	No	Uncertain.
6-27	Leach Valley	61,000	<0.03	No Designation	No	Uncertain.
7-51	Lost Horse Valley	17,000	0.03-0.20	No Designation	No	Uncertain.
6-71	Lost Lake Valley	23,000	<0.03	No Designation	No	Uncertain.
6-21	Lower Kingston Valley	240,000	<0.03	No Designation	No	Uncertain.

Table III.6-1
California Department of Water Resources Basins in the DRECP
(See Figure III.6-1 for basin locations.)

CDWR Basin Number	Groundwater Basin Name	Table Basin Area[1] (acres)	Estimated Groundwater Use[2] (ac-ft/acre)	Designated Overdraft Conditions	Adjudicated Basin	Water Level and Water Budget Conditions
6-40	Lower Mojave River Valley	285,000	0.03-0.20	Yes[2]	Yes[27]	The cumulative ground-water production upstream of the city of Barstow led to overdraft of the Mojave River ground-water basin.[34] The water-level change data from 334 wells show that more than one half (102) of the wells in the Mojave River ground-water basin had water-level declines of 0.5 feet or more, and almost one fifth (32) of the wells had declines greater than 5 feet between 2002 and 2004.[35]
7-19	Lucerne Valley	147,000	0.03-0.20	Yes[2]	Yes[27]	Since adjudication in 1996, water levels have remained relatively constant and, in fact, have begun to rise in some locations. This rise suggests that modern groundwater recharge must be similar to, or exceed, the volume of groundwater production.[19]
7-17	Means Valley	15,000	<0.03	No Designation	No	Uncertain.
6-29	Mesquite Valley	88,000	0.03-0.20	No Designation	No	Uncertain.
6-20	Middle Amargosa Valley	390,000	<0.03	No Designation	No	Uncertain.

Table III.6-1
California Department of Water Resources Basins in the DRECP
(See Figure III.6-1 for basin locations.)

CDWR Basin Number	Groundwater Basin Name	Table Basin Area[1] (acres)	Estimated Groundwater Use[2] (ac-ft/acre)	Designated Overdraft Conditions	Adjudicated Basin	Water Level and Water Budget Conditions
7-41	Middle Mojave River Valley	211,000	0.03-0.20	No Designation	Yes[27]	The cumulative ground-water production upstream of the city of Barstow led to overdraft of the Mojave River ground-water basin.[34] The water-level change data from 334 wells show that more than one half (102) of the wells in the Mojave River ground-water basin had water-level declines of 0.5 feet or more, and almost one fifth (32) of the wells had declines greater than 5 feet between 2002 and 2004.[35]
7-20	Morongo Valley	7,000	<0.03	No Designation	No	Uncertain.
7-44	Needles Valley	88,000	<0.03	No Designation	No	Uncertain.
7-25	Ocotillo–Clark Valley	222,000	<0.03	No Designation	No	The computed decline from 1925 to December 1975 was 15 ft. in Ocotillo.[26]Groundwater levels declined 5 to 8 ft. during the period 1975 to 2001.[28]
7-35	Ogilby Valley	133,000	<0.03	No Designation	No	Uncertain.
7-31	Orocopia Valley	96,000	0.41-0.60	No Designation	No	Uncertain.
6-12	Owens Valley	661,000	0.03-0.20	No Designation	No	Uncertain.

Table III.6-1
California Department of Water Resources Basins in the DRECP
(See Figure III.6-1 for basin locations.)

CDWR Basin Number	Groundwater Basin Name	Table Basin Area[1] (acres)	Estimated Groundwater Use[2] (ac-ft/acre)	Designated Overdraft Conditions	Adjudicated Basin	Water Level and Water Budget Conditions
6-88	Owl Lake Valley	22,000	<0.03	No Designation	No	Uncertain.
6-28	Pahrump Valley	93,000	0.03-0.20	Yes[2]	No	Groundwater development has caused more than 10 ft. of decline in water levels.[21]Excessive water level decline, subsidence, depletion of aquifer.[22]
7-39	Palo Verde Mesa	225,000	<0.03	No Designation	No	Uncertain.
7-38	Palo Verde Valley	73,000	<0.03	No Designation	No	Uncertain.
6-58	Panamint Valley	259,000	<0.03	No Designation	No	Uncertain.
6-51	Pilot Knob Valley	138,000	<0.03	No Designation	No	Uncertain.
7-6	Pinto Valley	182,000	<0.03	No Designation	No	Uncertain.
7-49	Pipes Canyon Fault Valley	3,000	<0.03	No Designation	No	Uncertain.
7-45	Piute Valley	175,000	<0.03	No Designation	No	Uncertain.
7-52	Pleasant Valley	10,000	<0.03	No Designation	No	Uncertain.
7-40	Quien Sabe Point Valley	25,000	<0.03	No Designation	No	Uncertain.

Table III.6-1
California Department of Water Resources Basins in the DRECP
(See Figure III.6-1 for basin locations.)

CDWR Basin Number	Groundwater Basin Name	Table Basin Area[1] (acres)	Estimated Groundwater Use[2] (ac-ft/acre)	Designated Overdraft Conditions	Adjudicated Basin	Water Level and Water Budget Conditions
6-24	Red Pass Valley	96,000	<0.03	No Designation	No	Uncertain.
6-86	Rhodes Hill Area	16,000	<0.03	No Designation	No	Uncertain.
7-4	Rice Valley	188,000	<0.03	No Designation	No	Uncertain.
6-23	Riggs Valley	88,000	<0.03	No Designation	No	Uncertain.
6-56	Rose Valley	42,000	0.03-0.20	No Designation	No	Long term groundwater level monitoring data collect beginning in 2001 have shown increased levels by 1 to 2 ft.[23]
6-53	Salt Wells Valley	30,000	<0.03	No Designation	No	Uncertain.
6-52	Searles Valley	197,000	<0.03	No Designation	No	Not enough data to provide an estimate of groundwater budget.[10] WLs declined 110 ft. from 1917-1967.[5]
6-34	Silver Lake Valley	35,000	<0.03	No Designation	No	Uncertain.
6-33	Soda Lake Valley	380,000	<0.03	No Designation	No	Groundwater discharge occurs through evaporation since the water table is so close to the surface. Extensive pumping would most likely have negative effects.[24]
6-82	Spring Canyon Valley	5,000	<0.03	No Designation	No	Uncertain.

Table III.6-1
California Department of Water Resources Basins in the DRECP
(See Figure III.6-1 for basin locations.)

CDWR Basin Number	Groundwater Basin Name	Table Basin Area[1] (acres)	Estimated Groundwater Use[2] (ac-ft/acre)	Designated Overdraft Conditions	Adjudicated Basin	Water Level and Water Budget Conditions
6-49	Superior Valley	120,000	<0.03	No Designation	No	Not enough data to provide an estimate of groundwater budget.[10]
7-45	Tehachapi Valley East	24,000	<0.03	Yes[2]	Yes [27]	Safe yield for Tehachapi Valley (east and west combined) is 5,500 acre feet annually.[32]
5-28	Tehachapi Valley West	15,000	0.21-0.40	Yes[2]	Yes [27]	Safe yield for Tehachapi Valley (east and west combined) is 5,500 acre feet annually.[32]
7-10	Twenty nine Palms Valley	62,000	0.03-0.20	No Designation	No	Uncertain.
6-22	Upper Kingston Valley	177,000	<0.03	No Designation	No	Uncertain.
6-42	Upper Mojave River Valley	412,000	0.21-0.40	Yes[7]	Yes [27]	The cumulative ground-water production upstream of the city of Barstow led to overdraft of the Mojave River ground-water basin.[34]The water-level change data from 334 wells show that more than one half (102) of the wells in the Mojave River ground-water basin had water-level declines of 0.5 feet or more, and almost one fifth (32) of the wells had declines greater than 5 feet between 2002 and 2004.[35]
8-2.05	Upper Santa Ana Valley–Cajon	23,000	>0.8	No Designation	No	Uncertain.
7-28	Vallecito-Carrizo Valley	122,000	<0.03	No Designation	No	Uncertain.

Table III.6-1
California Department of Water Resources Basins in the DRECP
(See Figure III.6-1 for basin locations.)

CDWR Basin Number	Groundwater Basin Name	Table Basin Area[1] (acres)	Estimated Groundwater Use[2] (ac-ft/acre)	Designated Overdraft Conditions	Adjudicated Basin	Water Level and Water Budget Conditions
7-42	Vidal Valley	138,000	<0.03	No Designation	No	Uncertain.
7-3	Ward Valley	558,000	<0.03	No Designation	No	Uncertain.
7-12	Warren Valley	24,000	0.03-0.20	No Designation	Yes[27]	Water levels have increased since 2009.[25]
7-22	West Salton Sea	105,000	<0.03	No Designation	No	Uncertain.
6-75	Wildrose Canyon	5,000	<0.03	No Designation	No	Uncertain.
6-19	Wingate Valley	71,000	<0.03	No Designation	No	Uncertain.
7-36	Yuma Valley	124,000	<0.03	No Designation	No	Uncertain.

1 The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

2 California Groundwater Elevation Monitoring - Basin Prioritization Process. December 2013.

3 Kennedy/Jenks/Todd LLC. Basin Conceptual Model and Assessment of Water Supply and Demand for the Ames Valley, Johnson Valley, and Means Valley Groundwater Basins2007.

4 Bighorn-Desert View Water Agency High Desert Water District. Ames Valley Water Basin Monitoring Program 2011.

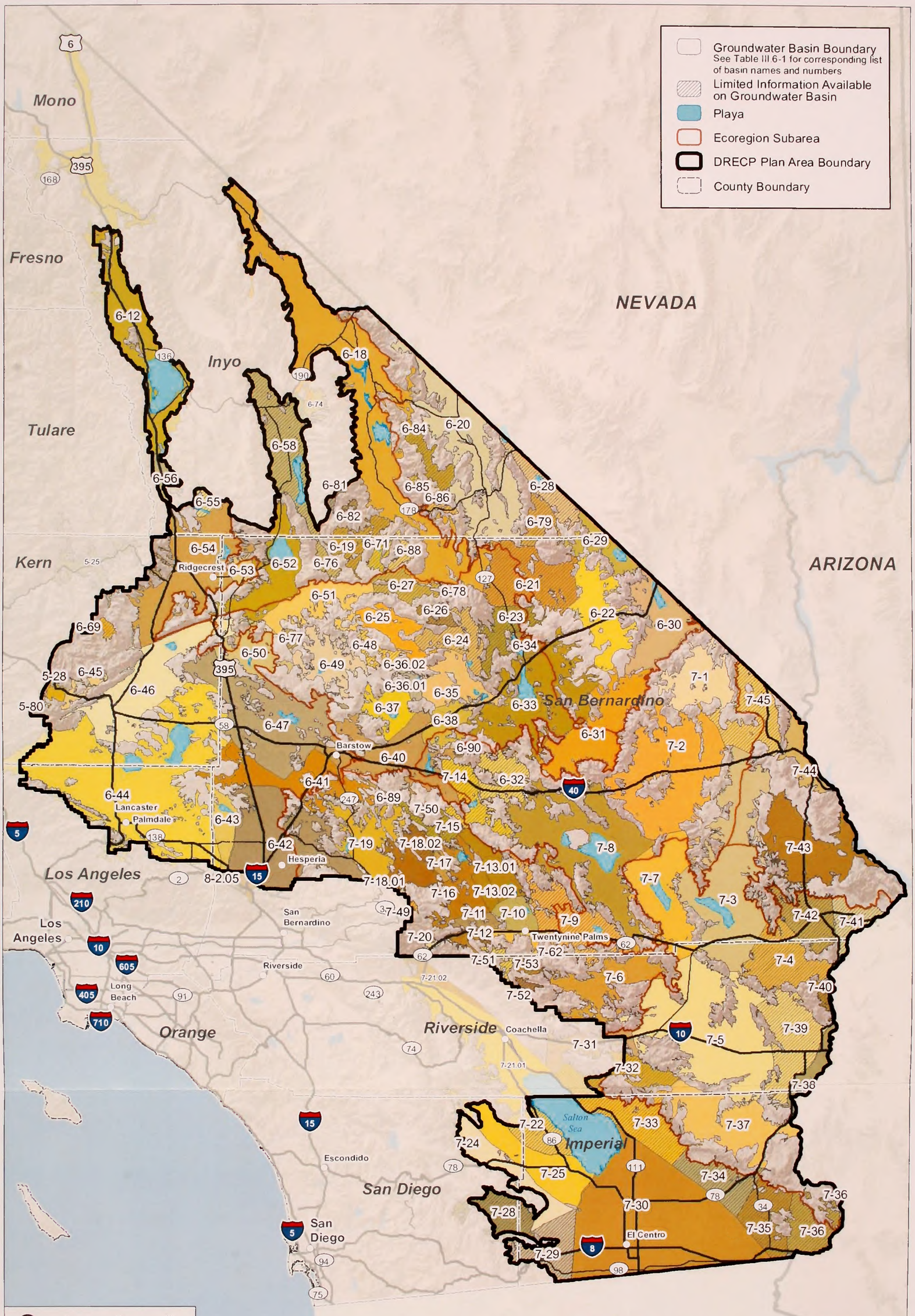
5 California Department of Water Resources. 2004. California's Groundwater—Bulletin 118. Last revised: February 27, 2004. Available: http://www.waterplan.water.ca.gov/groundwater/118index.htm.

6 Mendez, Gregory, O., and Allen H. Christensen. "Regional Water Table (1996) and Water-Level Changes in the Mojave River, the Morongo, and the Fort Irwin Ground-Water Basins, San Bernardino County, California." U.S. Geological Survey Water-Resources Investigations Report 97-4160, 1997.

7 Hydrogeologically vulnerable areas map' State Water Resource Control Board, November 2000.

8. Evaluation of Nonpotable Ground Water in the Desert Area of Southeastern California for Powerplant Cooling, U.S. Geological Survey Water-Supply Paper 2343, 1989.
9 Coachella Valley Water District, Engineer's Report on Water Supply and Replenishment assessment mission Creek Subbasin Area of Benefit 2014.
10 Mojave Water Agency. 2004 Regional Water Management Plan, Vol. 1, 2004.
11 Oeste Atlas, California State University Fullerton, Department of Geology. July 2009.
12 Freiwald, David A. Ground-water Resources of Lanfair and Fenner Valleys and Vicinity, San Bernardino County, California, Water-Resources Investigations Report 83-4082, 1984.
13 Harper lake basin, Hydrogeologic report, July 2010.
14 Groundwater Development and Recharge Potential for the Imperial Valley Imperial Irrigation District (IID). Appendix B Desalination/Groundwater Development Feasibility Study.
15 French, James J. Groundwater Storage in the Johnson Valley Area, San Bernardino County, California. U.S Geological Survey 1978. Water Resources Investigations 77-130.
16 National Park Service Mojave National Preserve, National Park Service Water Resources Division, and Department of Earth Resources Colorado State University, eds. Water Resources Scoping Report, no. NPS/NRWRD/NRTR-99/225.
17 Simulation of Ground-Water Flow in the Irwin basin Aquifer System, Fort Irwin National Training Center, California.
18 Geohydrology, Geochemistry and Groundwater Simulation and Analysis of Potential Water-Supply Management Options, United States Geological Survey.
19 Laton, W.R., J. Foster, M. Blazevic, N. Napoli and R. Perez. 2005. Este Hydrologic sub-basin Hydrogeologic Report. Unpublished public report. Mojave Water Agency
20 Owens Valley Hydrogeology.' United States Geological Survey.
21 Harrill, James R. Ground-Water Storage Depletion in Pahrump Valley, Nevada-California, 1962-75, U.S. Geological Survey Water-Supply Paper 2279, 1986.
22 Presentation on Pahrump Valley Water Resource Management 2012. State of Nevada Division of Water Resources Office of the State Engineer.
23 Coso Operating Company Hay Ranch Water Extraction and Delivery System. Appendix H. Hydrology and Water Quality, July 2008.
24 Evaluation of Nonpotable Ground Water in the Desert Area of Southeastern California for Powerplant Cooling, Soda Lake Valley, U.S. Geological Survey Water-Supply Paper.
25 Annual Report of the Warren Valley Basin Water Master, December 2011.
26 Digital-model evaluation of the ground-water resources in Ocotillo–Coyote Wells Basin, Imperial County, California 1977, Skrivan, James A. U.S. Geological Survey Water-Resources Investigations Report: 77-30.
27 Adjudicated Groundwater Basins, CDWR Water Facts 3, June 2011.
28 Ocotillo/Coyote Wells Hydrology and Groundwater Modeling Study, Bookman-Edmonston, January 16, 2004.
29 Groundwater in the Koehn Lake Area, Kern County California, U.S. Geological Survey Water-Resources Investigation 77-66, J.H. Koehler 1977.
30 Cadiz Valley Water Conservation, Recovery, and Storage Project, Final Environmental Impact Report, Prepared for Santa Margarita Water District, July 2012.
31 U.S. Department of the Interior Bureau of Reclamation, *Plan of Study for the Southeast California Regional Basin Study - A Water Supply, Conveyance and Storage Assessment*, 2010.
32 Tehachapi-Cummings County Water District, Ground Water Management, <http://tccwd.com/ground-water-managment/>.
33 Todd Engineers, *Review of Groundwater Issues, Draft EIR/EIS for US Gypsum Expansion/Modernization Project*, 2007.
34 Stamos, Christina L., Peter Martin, Tracy Nishikawa, and Brett F. Fox. Simulation of Ground-Water Flow in the Mojave River Basin, California. U.S. Geological Survey Water-Resources Investigations Report. 2001.
35 Stamos, Christina L., Julia A. Huff, Steven K. Predmore, and Dennis A. Clark. Regional Water Table (2004) and Water-Level Changes in the Mojave River and the Morongo Ground-Water Basins, Southwestern Mojave Desert, California. U.S. Geological Survey Scientific Investigations Report, 2004-5187.

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014), California Department of Water Resources (2003)

FIGURE III.6-1

Groundwater Basins and Data Availability

INTENTIONALLY LEFT BLANK

One typical outcome of adjudication is the need for additional imported water supplies. Although imports and adjudication are not necessarily linked, in the Plan Area adjudicated groundwater basins are the same as those with State Water Project contractors. These are the upper, middle, and lower Mojave River Valley basins, Antelope Valley (adjudication is in progress), Brite Valley, Cummings Valley, Tehachapi Valley East, Tehachapi Valley West, El Mirage Valley, Warren Valley (partial), and Upper Santa Ana Valley–Cajon Sub-basin.

III.6.2.2 Sole-Source Aquifers

Since 1977, the EPA's Sole-source Aquifer (SSA) Program has been used by communities to prevent contamination of groundwater from federally funded projects; this has had the added benefit of increasing public awareness of groundwater resource vulnerability. The only existing SSA within the Plan Area is the Ocotillo–Coyote Wells Aquifer, which is part of the Ocotillo–Clark Valley shown in Figure III.6-1 (Basin 7-25) and straddles the Imperial–San Diego county line.

III.6.2.3 Basins Tributary to the Colorado River

Colorado River water rights are managed and operated under numerous compacts, federal laws, court decisions and decrees, contracts, and regulatory guidelines collectively known as the "Law of the River." This collection of documents apportions Colorado River water and regulates its use and management among the seven basin states and Mexico. It is administered by the USBR (U.S. Bureau of Reclamation 2010). This body of law was affirmed and clarified in the Consolidated Decree (547 U.S. 150, 2006).

Several groundwater basins along the eastern edge of the Plan Area are hydraulically connected and possibly coupled, or tributary, to flow in the Colorado River. These basins are segregated into three categories (Figure III.6-2): (1) "Floodplain Areas," as mapped for the USBR by the USGS; (2) the larger "River Aquifer," mapped for the USBR by the USGS; and (3) the basins described in CDWR Bulletin 118 with subsurface outflow toward the Colorado River and thus classified as "possibly tributary" to the river. The Colorado River Aquifer, which includes the river floodplain, defines the Colorado River Accounting Surface area. That aquifer also includes saturated sediments above the Accounting Surface that are more distant and hydraulically connected flows within the river channel itself. The Accounting Surface delineates the area where groundwater pumping is managed, pursuant to the USBR's accounting of the disposition of Colorado River water (U.S. Bureau of Reclamation 2011). Groundwater basins entirely or partially located within the Colorado River Aquifer include: Arroyo Seco Valley, Cadiz Valley, Calzona Valley, Chemehuevi Valley, Chuckwalla Valley, Imperial Valley, Needles Valley, Ogilby Valley, Palo Verde Mesa, Palo Verde Valley, Quien Sabe Point Valley, Rice Valley, and Yuma Valley. Four additional basins that are not located within the River Aquifer, but which CDWR Bulletin 118 indicates are

potentially tributary to the aquifer, are the Chocolate Valley, Orocopia Valley, Pinto Valley, and Vidal Valley basins.

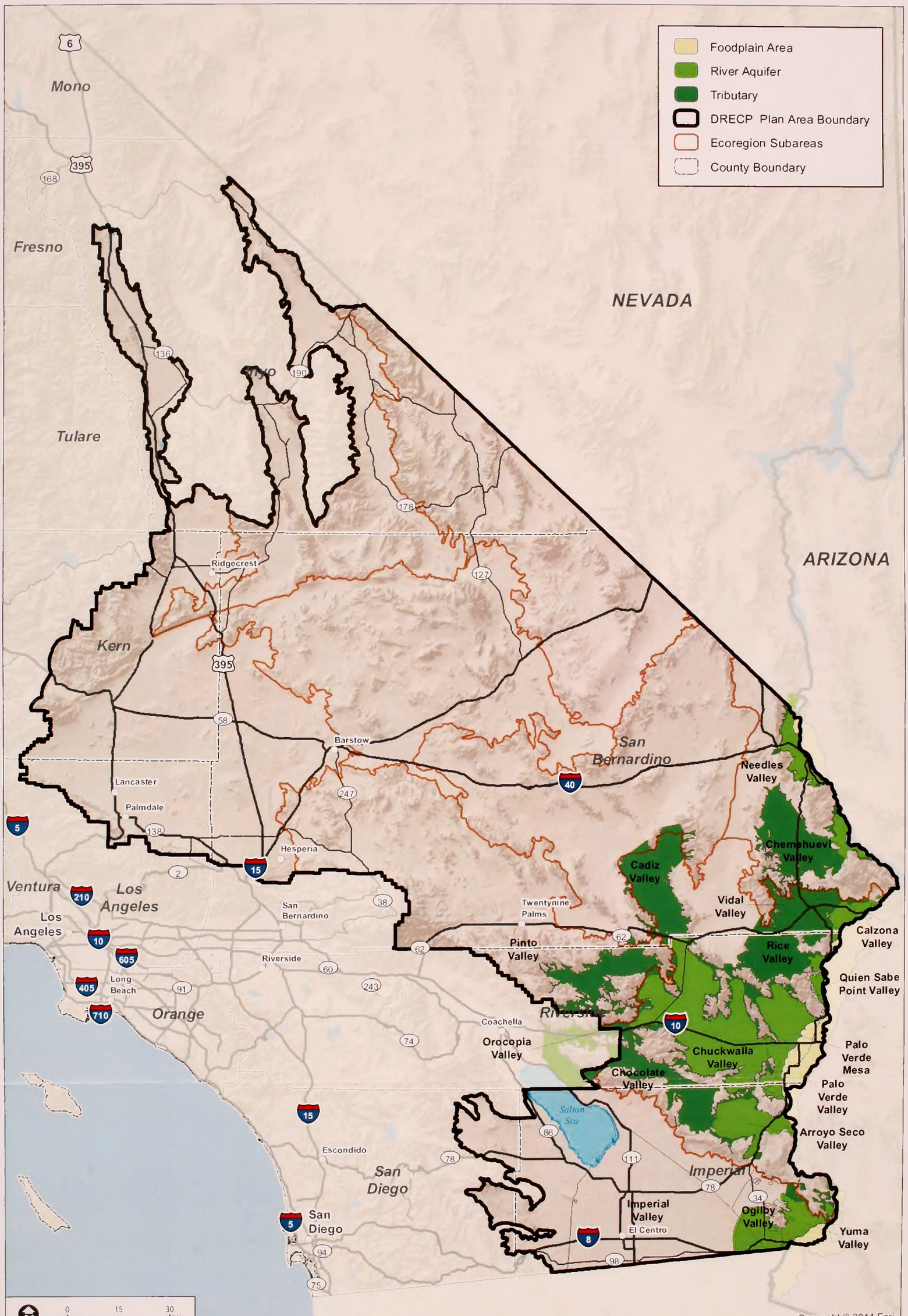
Extraction wells located in potentially tributary basins may intercept groundwater recharge that otherwise flows to the Colorado River Aquifer. Water-level data are sparse for these alluvial basins, so the direction and/or rate of groundwater flow are often uncertain. Given the low rates of groundwater recharge in the eastern part of the Plan Area, subsurface flow from these interior basins into the River Aquifer may represent only a small contribution to the overall volumetric groundwater budget (Wilson and Owen–Joyce 1994). Data are not available, however, to calculate these flows and determine their relative significance to the Colorado River Aquifer groundwater budget.

Renewable energy projects that consumptively use groundwater from either the floodplain, or from below the Accounting Surface in the interior parts of the aquifer, would need to acquire part of California's 4.4 million acre-feet/year Colorado River water allocation from an existing user. Presently, 87.5% of the state's 4.4 million acre-feet/year allocation goes to three irrigation districts with senior rights: Palo Verde Irrigation District, Imperial Irrigation District and Coachella Valley Water District. The fourth and fifth priority allocations are owned by the Metropolitan Water District of Southern California, of which the fifth priority only provides water in years of surplus flows (Metropolitan Water District of Southern California 2009).

III.6.3 Hydrogeological and Water Quality Framework

III.6.3.1 Aquifer Characteristics

Aquifers in the Basin and Range Province / Plan Area are often composed of unconsolidated Quaternary alluvial deposits underlain by older unconsolidated to semi-consolidated Quaternary to Tertiary alluvial deposits. These deposits consist of intermixed gravel, sand, silt, and clay. The less productive aquifers are composed of playa lake deposits, clays, and fine grained materials. Shallow dune sand deposits, and unconfined alluvial channel sands and gravels are also often dry.



Sources: ESRI (2014); California Department of Water Resources (2003); U.S. Bureau of Reclamation (2011b)

FIGURE III.6-2

Groundwater Basins Coupled or Possibly Tributary to the Colorado River

INTENTIONALLY LEFT BLANK

The more productive aquifers vary in location and area. Certain basins have an extensive aquifer system with Miocene to Quaternary continental deposits of moderately consolidated sand, gravel, and boulders (for example, the Antelope Valley, Copper Mountain Valley, Deadman Valley [Deadman Lake and Surprise Spring], Joshua Tree, and Twentynine Palms Valley basins), or the coarse grained fanglomerate deposits of boulders, lacustrine clay, and interbedded basalt flow formed by the Pinto or Bouse Formation (for example, the Chuckwalla Valley, Death Valley, Needles Valley, Orocopia Valley, and Palo Verde Valley basins). In contrast, near the Mojave and Colorado rivers the most productive aquifers occur in the Pleistocene and younger floodplain deposits adjacent to the rivers.

In addition to alluvial basin aquifers, in some locations the Plan Area is underlain by deeper, regional carbonate aquifers. For example, springs and seeps in the Death Valley area are generally supported by groundwater discharge from the regional carbonate aquifer system that underlays a large portion of Nevada and part of Utah. Another example is the springs and seeps in the San Bernardino Mountains that are fed by groundwater from local carbonate sediments.

Another characteristic of desert aquifers in the Plan Area is that most seeps, springs, and rivers, are groundwater dependent. That is, these riparian areas occur due to subsurface structures or other geological conditions, and the groundwater discharge is generally from recharge that is relatively far away. Two examples of this are the Mojave River at Afton Canyon and the designated Wild and Scenic Amargosa River.

Fractured rock can form another type of aquifer. These fractured-rock aquifers generally occur in bedrock units with little to no primary permeability. Limited groundwater may be associated with these permeable fractures and joints. This type of aquifer will generally produce enough water for modest domestic use.

The storage capacities of Plan Area alluvial basins reported in CDWR Bulletin 118 vary widely and are mapped in Figure III.6-3. The groundwater storage capacity is primarily a function of basin area, basin depth, and sediment texture. Sediment texture refers to the relative proportions of clay, silt, sand, and cobles (particle size) and its influence on the porosity and permeability of the sediment deposit. Both groundwater storage and storage capacity estimates are relatively large for most of the basins due to the mapped size and scale of this analysis. Recharge, however, can be relatively small in the same basins because of the arid climate (see Section III.6.3.3.2), and the large storage capacity can create the misleading impression that groundwater availability is high, leading in turn to potentially erroneous long-term commitments or allocations of the resource that ignore perennial groundwater yield constraints.

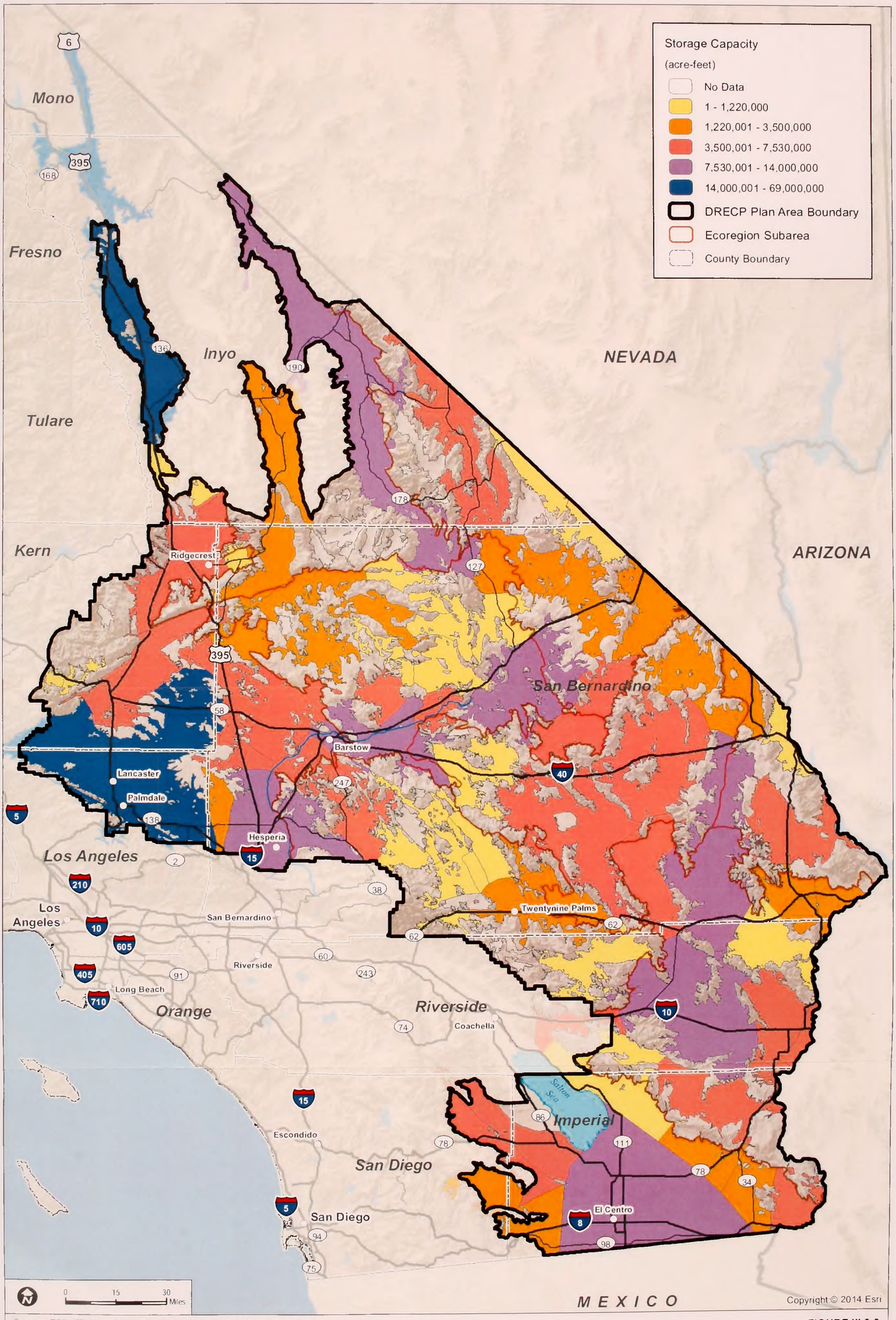
Recognizing this limitation, the comparison of basin storage capacities is only useful for qualitative comparisons of the relative resource potential between basins. Perennial (or sustainable) yield is a more useful gauge of groundwater availability; that is, water which is produced without damaging the aquifer or negatively affecting groundwater users and groundwater-dependent resources.

In general, basins with the lowest reported storage capacity values (less than 3,500,000 acre-feet) are south of Death Valley or near the Twentynine Palms area. Groundwater basins with higher reported storage capacity values (up to 14,000,000 acre-feet) occur near the Mojave River, in basins surrounding the Cadiz Valley, in Death Valley, and south of the Salton Sea. Owens Valley and Antelope Valley have the greatest reported storage capacity values (14,000,000 and 69,000,000 acre-feet, respectively). Although these storage capacities appear large, for practical purposes most of the water is likely unavailable due to high pumping costs, poor quality, or low perennial yield. For example, exceeding a basin's perennial yield can cause subsidence, increased pumping lifts, and drying of springs, streams and playas.

Reported well yields are a general indicator of a basin's ability to transmit groundwater. Distribution of typical irrigation and municipal supply well yields, as reported in CDWR Bulletin 118, are mapped in Figure III.6-4. In general, average yields vary from 16 gallons per minute (gpm) to 2,500 gpm. Of the basins with reported municipal/irrigation well yields, most yields fall between 200 and 500 gpm. However, 16 basins have relatively low reported municipal/irrigation well yields (less than 100 gpm), and 10 basins have reported yields greater than 1,000 gpm. Middle Amargosa Valley has the highest reported municipal/irrigation well yields, ranging from 2,500 to 3,000 gpm, which may correspond to extraction from the carbonate aquifer. Lanfair Valley has the lowest recorded municipal/irrigation well yields, ranging from 3 to 70 gpm and averaging 16 gpm, which may correspond to a thin alluvial or fractured rock aquifer.

III.6.3.2 Groundwater Basin Boundaries

A portion of the Plan Area is in the Basin and Range Geologic Province, where vertical movement along faults creates deep fault-bounded structural troughs filled with alluvial deposits derived principally from erosion of the steep, narrow mountain ranges that separate the basins. The boundaries between valley floor areas (groundwater basins) and adjacent mountain ranges are therefore commonly associated with faults.

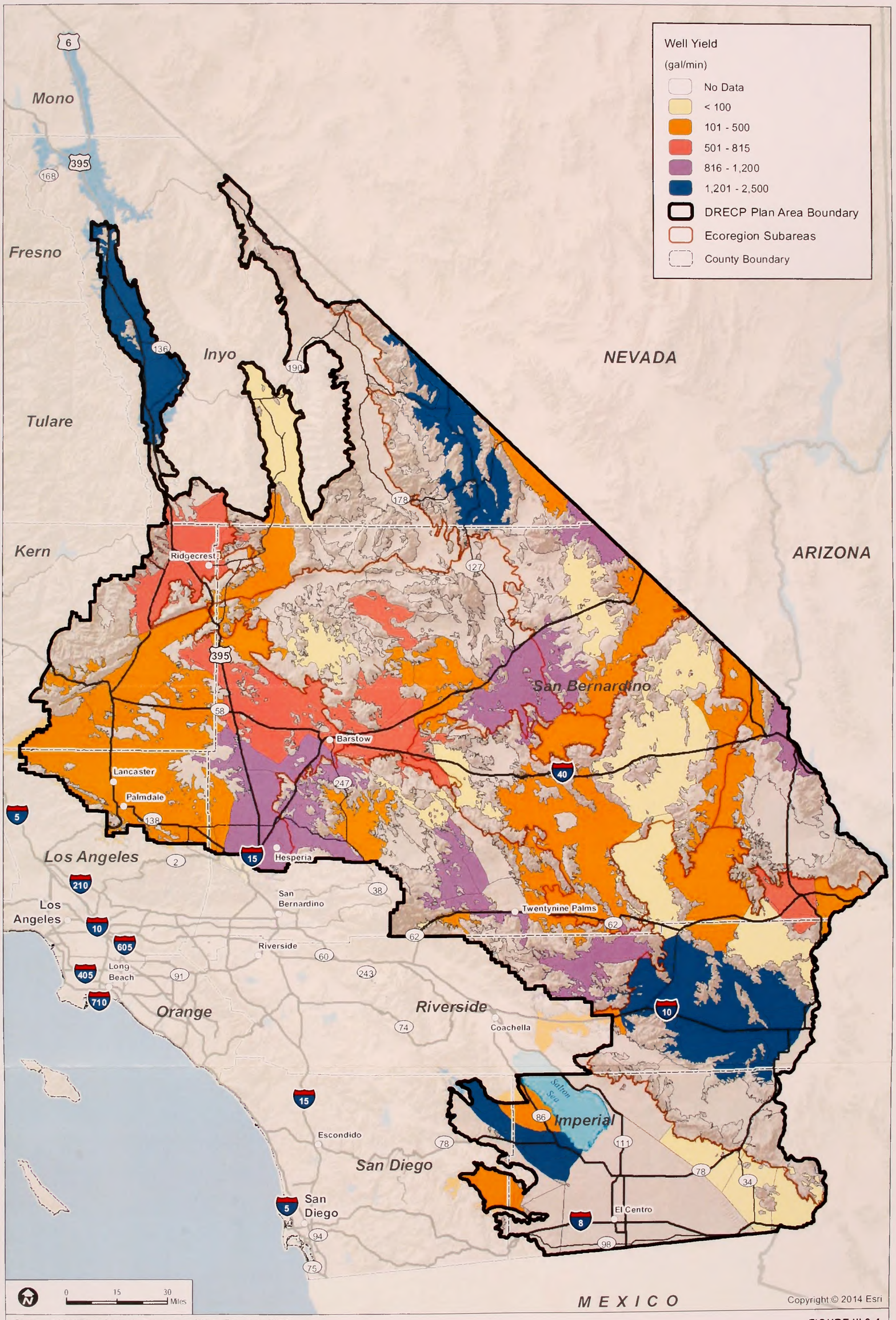


Sources: ESRI (2014); California Department of Water Resources (2003)

FIGURE III.6-3

Distribution of Reported Storage Capacity

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); California Department of Water Resources (2003)

FIGURE III.6-4

Distribution of Average Reported Irrigation and Municipal Well Yields

INTENTIONALLY LEFT BLANK

Figure III.6-5 shows alluvial basins bordered by faults, and additional faults that run through the interior of some basins. The hydraulic influence of these faults is variable. Some faults provide preferential pathways for vertical or horizontal groundwater flow along the fault; other faults act as a barrier and impede groundwater flow, either partially or completely. The San Andreas Fault Zone, Garlock Fault Zone, Elsinore Fault Zone, Granite Mountain Fault Zone, Pinto Mountain Fault Zone, and Death Valley-Furnace Creek Fault Zone may act as barriers or impediments to subsurface flow in many portions of the groundwater basins. Other smaller faults may or may not have similar characteristics with respect to influencing groundwater movement within basins. Hydrologic analyses for renewable energy projects will need to collect sufficient groundwater data to evaluate the influence of faults on groundwater flow into, within, and out of the basins.

Some alluvial groundwater basins are hydrologically connected, and water can move between basins across their boundaries, through or over fault planes, or through alluvium-filled gaps in mountain ranges. These basins are considered "interconnected basins," and their characteristics are discussed in Section III.6.3.3.4 Interconnected Basins and Subsurface Flow.

III.6.3.3 Water Inflows and Outflows

The water balance (or budget) is an accounting of all inflows (recharge) and outflows (discharge) to and from a basin. If relatively long-term inflows exceed outflows, water in storage increases and groundwater levels should rise until groundwater discharge increases to establish a new equilibrium between inflow and outflow. For example, rising water levels can cause groundwater to discharge at the ground surface and become surface-water outflow in the form of perennial streams, springs, or lakes. These surficial discharges either flow out from the basin or are consumed by either riparian vegetation (evapotranspiration), beneficial use, or simple evaporation . Shallow groundwater can also evaporate from playas, be transpired by phreatophytic vegetation, or leave the basin as groundwater underflow. Phreatophytic vegetation is deep-rooted and obtains water from a permanent groundwater supply or from the water table. In the opposite case, when groundwater is extracted and consumed, the increased outflow can sometimes exceed inflow; as a result, water in storage can decrease causing groundwater levels to decline and natural discharge to decrease. Declining groundwater levels can decrease the yields of existing wells, decrease discharge to streams, springs, and playas, and reduce the water supply available to phreatophytes. Declining groundwater levels can also cause compaction of previously saturated beds and subsidence of the land surface. Subsidence creates an irreversible reduction in groundwater storage capacity.

The CDWR reported basin water balance estimates are approximate at best. Bulletin 118 categorizes almost all basins in the Plan Area as having "Type C" water budgets, which

means there is little knowledge of any of the budget's components at the time it was published. This means that detailed data collection and analysis will often be required to appropriately quantify the water budget components and assess the possible effects of groundwater consumption by renewable energy projects.[2]

The following sections describe budget-related variables that provide a partial basis for a relative comparison of water budget conditions among the basins.

III.6.3.3.1 Recharge from Imported Water

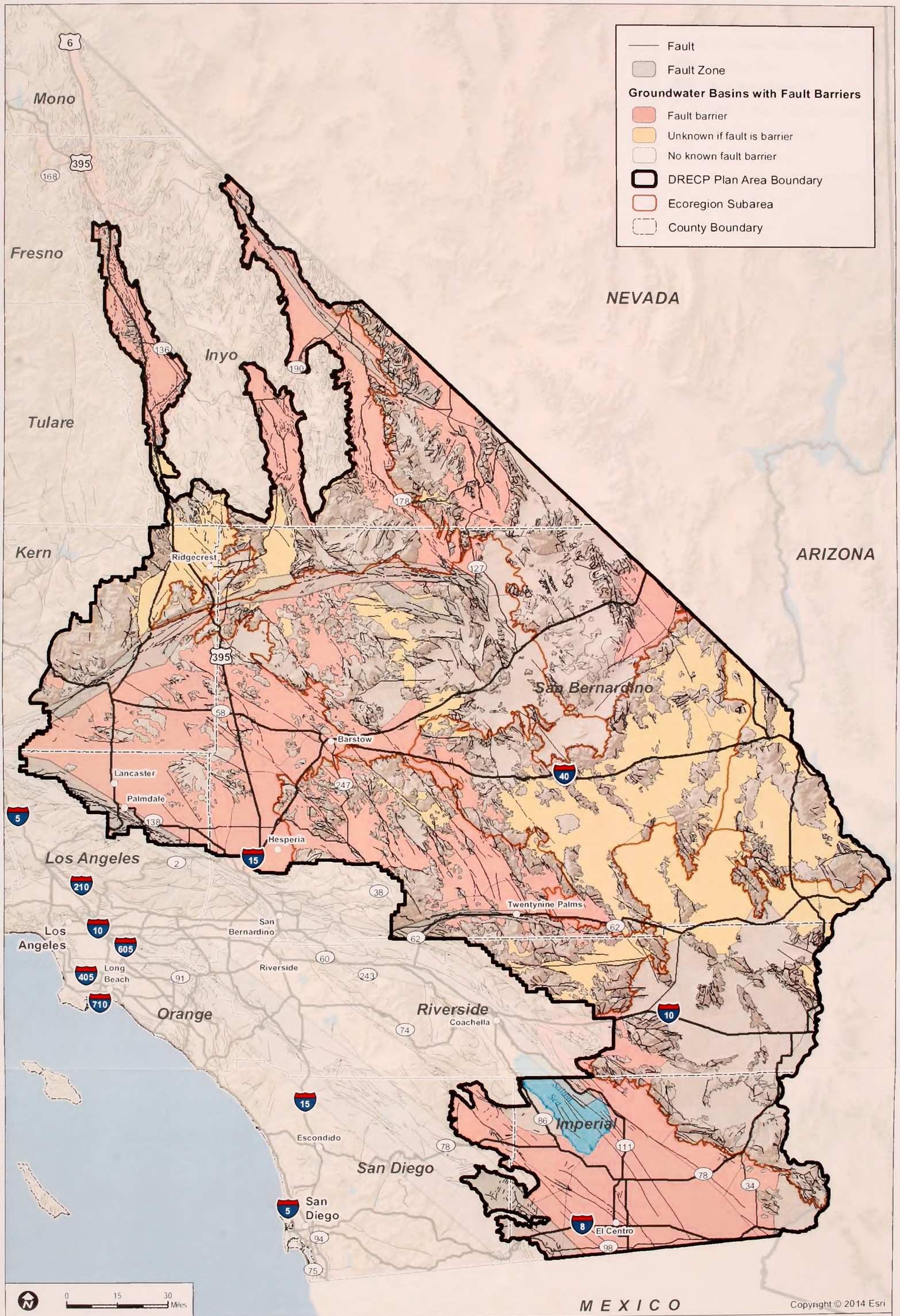
Imported water is a potential source of groundwater recharge– either intentionally through artificial injection or percolation (wells and ponds), or indirectly as deep percolation of applied water. Several basins in the Plan Area receive substantial amounts of imported surface water, and these basins have large acreages of irrigated agriculture. As shown in Figure III.6-6, these basins include nine that receive water from the State Water Project in the western part of the Plan Area, and four that receive water from the Colorado River. Several additional basins include irrigated areas along the Colorado River where groundwater pumping is considered equivalent to a river diversion.

III.6.3.3.2 Rainfall Recharge

Groundwater recharge derives mainly from precipitation on mountains adjacent to the basins and underflow from tributary basins. The spatial variability in recharge is high due to large differences in precipitation, potential evapotranspiration, bedrock permeability, soil thickness, vegetation characteristics, and contributions to recharge along gullies, washes, and stream channels. Because annual rainfall amounts are generally small and desert plants capture most of the rainwater, rainfall recharge rarely occurs on the valley floor except, perhaps, in very wet years (Stonestrom et al. 2007). In the mountain ranges between basins, rainfall is greater and much of the ground surface consists of exposed rock or thin soils. This prevents plants from capturing all of the rainfall before it either infiltrates into underlying bedrock fractures or runs off. Infiltration into the mountain bedrock fractures can gradually percolate downward and laterally into the alluvial basin deposits at lower elevations.

---

[2] Some water budget components reported as part of existing programs can provide a starting point for detailed water budget assessments. For example, in adjudicated basins the specific information can be obtained from the various court-appointed Watermasters that manage those basins. In other developed basins, some budget information can be obtained from Urban Water Management Plans (UWMP) prepared by the urban water suppliers. For example, UWMPs have been prepared for the Mojave Basin (http://www.mojavewater.org/planning.html) and the Antelope Valley Basin (http://www.ladpw.org/wwd/avirwmp/index.cfm?fuseaction=documents). Additional UWMPs for entities in the Plan Area are available from CDWRCDWR (http://www.water.ca.gov/urbanwatermanagement/2010uwmps).

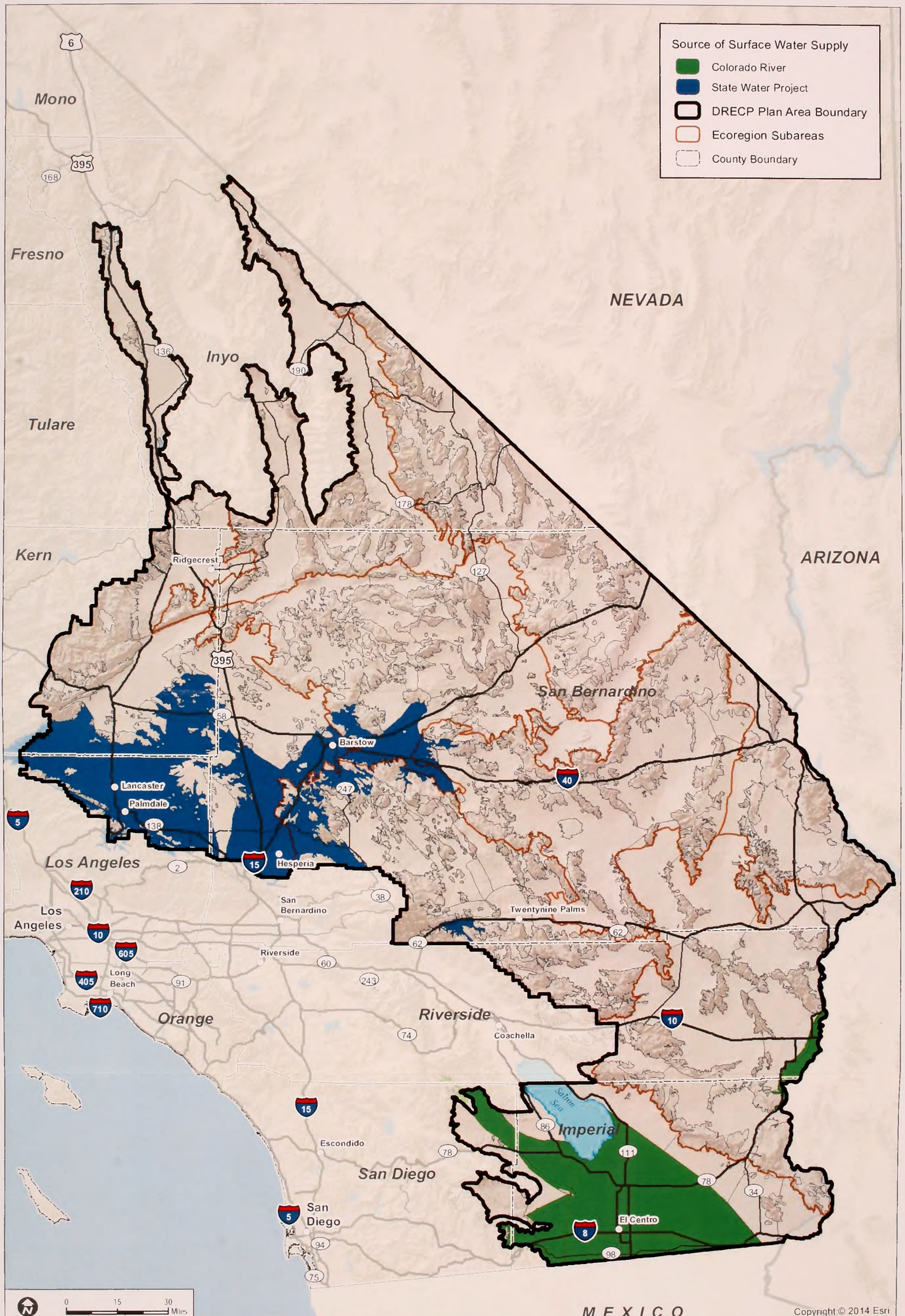


Sources: ESRI (2014); California Department of Water Resources (2003); U.S. Geological Survey (2005)

FIGURE III.6-5

Groundwater Basins with Internal Fault Barriers

INTENTIONALLY LEFT BLANK



Sources: ESRI (2014); California Department of Water Resources (2003); U.S. Bureau of Reclamation (2011b); Metropolitan Water District of Southern California (2009)

FIGURE III.6-6

Groundwater Basins That Receive Substantial Surface Water Supplies

INTENTIONALLY LEFT BLANK

Rainfall runoff from the mountain areas flows into gullies and washes of coarse-grained alluvial deposits that discharge onto the valley floor. Percolation from these washes, referred to as mountain front recharge, can recharge the groundwater basin beneath the valley floor. The percentage of runoff that becomes recharge varies from channel to channel and from event to event, but its volume typically exceeds the rate at which plants can intercept and consume it. Wilson and Guan (2004) summarized the relationships between precipitation and mountain front recharge at various desert locations in Arizona, Colorado, New Mexico, Nevada, and Utah, and reported that recharge ranged from 0.2- to 38% of total precipitation (median value of about 8%). They concluded that the large variation indicates these relationships are variable and site specific.

The USGS developed methods for estimating groundwater recharge for the large desert regions of the southwestern United States (Flint and Flint 2007). They employed a distributed-parameter water-balance model (Basin Characterization Model) that combines digital representations of topography, soils, geology, and vegetation with monthly precipitation and air-temperature data. Monthly potential evapotranspiration is estimated using a submodel for solar radiation that accounts for topographic shading, cloudiness, and vegetation density. Snowpack accumulation and melting are also modeled using precipitation and air-temperature data. For a 270-by-270-meter grid (approximately 890 by 890 feet grid) that covers the entire southwestern United States, the model computes monthly soil-water storage, in-place groundwater recharge, and runoff (potential stream flow). The model was not calibrated to recharge or runoff measurements, although results were compared with other recharge estimates at eight selected watersheds (one of the study-site basins, Mojave tributaries, is located in the Plan Area). The study area-wide average of simulated precipitation recharge, calculated as the sum of in-place recharge and 15% of the simulated runoff, ranged from 0.3% to 6% of average total precipitation; for the Mojave tributary study site, the simulated runoff was 2% of the total precipitation.

Figure III.6-7 shows a map of simulated average annual precipitation recharge for all Plan Area basins, summarized by ecoregion subarea. The recharge values represent the sum of simulated in-place precipitation recharge and from 0- to 15% of the simulated runoff. The internal Plan Area boundaries used for adding up the recharge values were modified somewhat from the Plan's ecoregion subarea boundaries to more closely follow internal watershed boundaries and thereby attribute recharge in some mountain areas to the correct internal basin area and ecoregion subarea. The mapped annual precipitation recharge results indicate that the values generally decrease from west to east. The recharge summed up and reported here does not include other potential sources of recharge like subsurface inflow, tributary inflows from adjacent areas outside the Plan Area, imported water supplies, and other components that can be relevant in some, but not all basins.

Watersheds and areas outside the overall general Plan Area boundary were not included in the recharge summation even though some of those areas may generate substantial amounts of surface runoff and subsurface inflow that could influence Plan Area basin water budgets. The rainfall recharge estimates in Figure III.6-7 can therefore underestimate total available recharge in some basins and ecoregion subareas. For example, the simulated average recharge within the boundaries of the Owens River Valley ecoregion subarea is only 400 to 450 acre-feet per year (Figure III.6-7), which is almost 2.5 orders of magnitude less than average recharge estimated for the valley by Danskin (1998), which used detailed water budget information that included tributary inflows. However, detailed evaluations like that reported for Danskin (1998) do not exist for most of the Plan Area. Therefore, the recharge estimates reported in Figure III.6-7 are limited, and do not represent absolute values for project specific analyses. They are rather approximate values for making relative comparisons between ecoregion subareas.

The precipitation recharge modeling shows that in-place recharge is significant only in the mountains; recharge is negligible in valley floor areas where all infiltrated rainfall is intercepted and consumed by plants (Hogan et al. 2004). On a per-area basis, basins with small valley floor areas and relatively extensive adjacent mountainous areas receive relatively large quantities of recharge. These variations among basins and differences between mountain and valley floor settings are obscured by the average ecoregion subarea values shown in Figure III.6-7. Detailed basin scale studies will be required for all projects planning to utilize groundwater as a water supply; these studies must identify and quantify the most significant components of groundwater recharge. Numerous previous investigations have used different methods and approaches to quantify the relationships between rainfall and estimated groundwater recharge in these desert environments (for example, Avon and Durbin [1994], Dettinger, [1989], Hevesi and others [2003], and Maxey Eakin [1950], to cite just a few).

The quantity of recharge in a basin is one factor influencing a basin's capacity to support consumptive groundwater use on a sustainable, long-term basis. Natural discharge quantities (e.g., playas, springs, streams, and shallow-groundwater areas that support vegetation) also influence a basin's capacity to support long-term consumptive groundwater use.



Sources: ESRI (2014); Flint and Flint (2007)

FIGURE III.6-7

Estimated Average Annual Recharge by Ecoregion Subarea Assuming 0- to 15-percent of Precipitation Runoff Becomes Recharge

INTENTIONALLY LEFT BLANK

III.6.3.3.3 Discharge from Playas, Springs, Streams, and Shallow-Groundwater Areas

Groundwater can support vegetation or aquatic habitat where it discharges into playas, springs or streams, or where the water table is close enough to the land surface for plant roots to reach it. Detailed basin-scale studies are needed to identify and quantify the most significant components of groundwater discharge. The National Hydrography Dataset (NHD) represents the regional drainage network, and was used to map springs and playas in the Plan Area (Figure III 6-8). Following is a general assessment of these features, based on available regional scale information.

Plan Area basins containing playas appear in Figure III.6-8. Not all playas receive groundwater—for example, playas are also formed by the temporary ponding of runoff during significant mountain storm events. A reconnaissance-level survey of playa areas for groundwater discharge or shallow water-table conditions was therefore completed using aerial photo inspection (Google Earth). Photographs of all playas in the Plan Area were inspected, but the mapping method was ultimately only approximate. For example, if CDWR Bulletin 118 reported groundwater flow toward the playa, if open water was visible in the playa, or if denser/greener vegetation appeared around the shore of the playa, it was assumed that the playa receives groundwater. These results therefore confirmed the existence of groundwater-dependent habitats that are potentially sensitive to the effects of increased groundwater withdrawals within the Plan Area. However, since the reconnaissance was regional and not exhaustive in scope, basin scale investigations are additionally required to identify these conditions, relative to specific project assessments.

Springs are common in the Plan Area (Figure III.6-8), and most springs are found either in the mountain canyons between basins (mountain block springs) or in upper piedmont areas where mountain bedrock transitions into alluvial valley fill (mountain front springs). In the north-central portion of the Plan Area, one inventory of springs in the 2,500-square-mile Mojave National Preserve listed a total of 240 springs (Shepherd 1993). A comparison of that list against both USGS topographic maps and springs listed in the Colorado RWQCB Basin Plan confirm that most of the springs are in upland terrain. If the average density of springs in the Mojave National Preserve is typical of ridges and valleys in the Basin and Range Province, the total number of springs in the 35,300-square-mile Plan Area could be on the order of 3,400. Most of these inferred springs would presumably also be in the upland areas.

Mountain block springs generally appear together with localized flow systems, and are sustained from above by groundwater that percolates down through bedrock fractures in mountain blocks. Therefore, mountain block springs are generally hydraulically disconnected from valley fill aquifers. In contrast, mountain front springs are generally connected

to valley fill aquifers. Evaluations of the effects of groundwater pumping from beneath the valley floor on mountain front springs must consider both the permeability contrasts between the mountain front transition zones where the springs are located, and the relatively less permeable valley floor alluvium where the pumping occurs.

Springs or shallow groundwater in valley floor areas are usually, but not always, associated with faults or narrow gaps between mountain blocks. Faults are abundant in the Plan Area, and many control groundwater flow (see Figure III.6-3). Wells on either side of faults sometimes have large differences in water levels. If permeability across a fault is sufficiently low, or if recharge is sufficiently high on the up-gradient side, the up-gradient groundwater levels can rise to the land surface and form springs that allow water to cross the fault as surface flow and support relatively thick stands of phreatophytes. The discharge typically percolates rapidly back into the ground on a fault's down-gradient side. Examples of these fault-induced springs are found in the Death Valley–Furnace Creek Fault Zone, the Surprise Spring Fault in the Deadman Valley Basin, and the San Andreas Fault in the Upper Santa Ana (Cajon) Basin. These alluvial groundwater basin springs can be vulnerable to groundwater pumping. For example, Surprise Spring, located in the Pahrump Valley basin, stopped flowing soon after pumping began in 1953, and all the mesquite trees dependent upon the spring died by 1985 (Londquist and Martin 1991). Springs supported by the regional carbonate aquifer in the northeastern part of the Plan Area can even be affected by pumping in adjacent basins. For example, springs along the eastern edge of the Death Valley basin could potentially be affected by pumping in the Middle Amargosa Valley or Greenwater Valley basins.

There are two examples along the Mojave River of shallow groundwater discharge-supported stream flow caused by narrowing of the alluvial cross-sectional area where it passes between two mountain blocks. At the "narrows" near Victorville, riparian vegetation lines the river channel and pools and there are intermittent flows along a 6-mile reach where alluvial narrowing and less permeable bedrock forces the water table up to the ground surface. Shallow groundwater supports phreatophytic vegetation as far as 0.5 mile from the channel. The river flows through a more pronounced bedrock gap area of thin alluvium at Afton Canyon (the downstream end of the Lower Mojave River Valley Basin). Riparian vegetation and persistent flow along this 4-mile reach of the river, because of steep terrain on either side, support phreatophytic vegetation for only 0.2 mile at its widest point.



Sources: ESRI (2014); National Hydrography Dataset

FIGURE III.6-8

Springs, Seeps, and Playas

INTENTIONALLY LEFT BLANK

Shallow groundwater can support phreatophytic vegetation even if the water table does not intersect the ground surface to create surface flow. This appears to be the case at some playas classified as "discharging playas," where denser and darker vegetation is visible in aerial photos but open water is not. Facultative phreatophytes such as mesquite have tap roots that can extend more than 100 feet below the ground surface. The growth habit reflects the depth to the water table—a taller, denser canopy, with a greater proportion of above-ground biomass, develops where the water table is shallow.

III.6.3.3.4 Interconnected Basins and Subsurface Flow

Some groundwater basins are hydrologically connected where water is exchanged between the basins as subsurface flow. This means that changes in water inflow or outflow conditions in one basin can potentially affect groundwater levels and storage conditions in adjacent basins. Three types of conditions allow groundwater flow between basins:

- **Alluvium is continuous between basins through a gap in bedrock**. Alluvium-filled gaps in the mountain ranges can allow groundwater to flow between basins. Examples include flow from the Middle Mojave River Valley Basin to the Harper Lake Valley Basin, from Lavic Valley to Broadwell Valley to Bristol Lake Basin, and from Pilot Knob to Brown Mountain Valley to Panamint Valley Basin.
- **Groundwater leaks across a fault boundary**. Many basins are bounded by relatively low permeability faults that obstruct groundwater flow and create large water-level differences across the fault. These faults are not always completely impervious, however, and regional gradients suggest they transmit some groundwater. Examples include the Pinto Mountain and Mesquite faults separating the Joshua Tree, Twentynine Palms and Dale Valley basins; the San Andreas Fault that separates the Ogilby Valley and Amos Valley basins from the Imperial Valley Basin; and the Coyote Creek–Superstition Mountain Fault that forms the boundary between the Borrego Valley and Ocotillo–Clark Valley basins.
- **Groundwater flows through regionally extensive limestone formations**. Exposed limestone formations can be bedrock in mountain ranges. Where these formations underlie alluvium, they transmit groundwater beneath and between the overlying alluvial basins. Examples include groundwater flow from the Greenwater Valley and Middle Amargosa Valley basins to springs along the east side of Death Valley Basin, and springs in the San Bernardino Mountains.

Figure III.6-9 groups the Plan Area basins that CDWR Bulletin 118 indicates are interconnected. There are other basins where flow between adjacent basins is likely, but where available geologic information and water-level data are insufficient to confirm existence of the flow. So even though available data do indicate that flow between basins is relatively

common, it remains difficult to verify or quantify. Proposed renewable energy development applicants and existing grant holders will need to either collect or fund the collection of information so that the flow between interconnected basins can be adequately assessed and the effects of groundwater extraction on down-gradient conditions quantified.

III.6.3.3.5 Consumptive Use

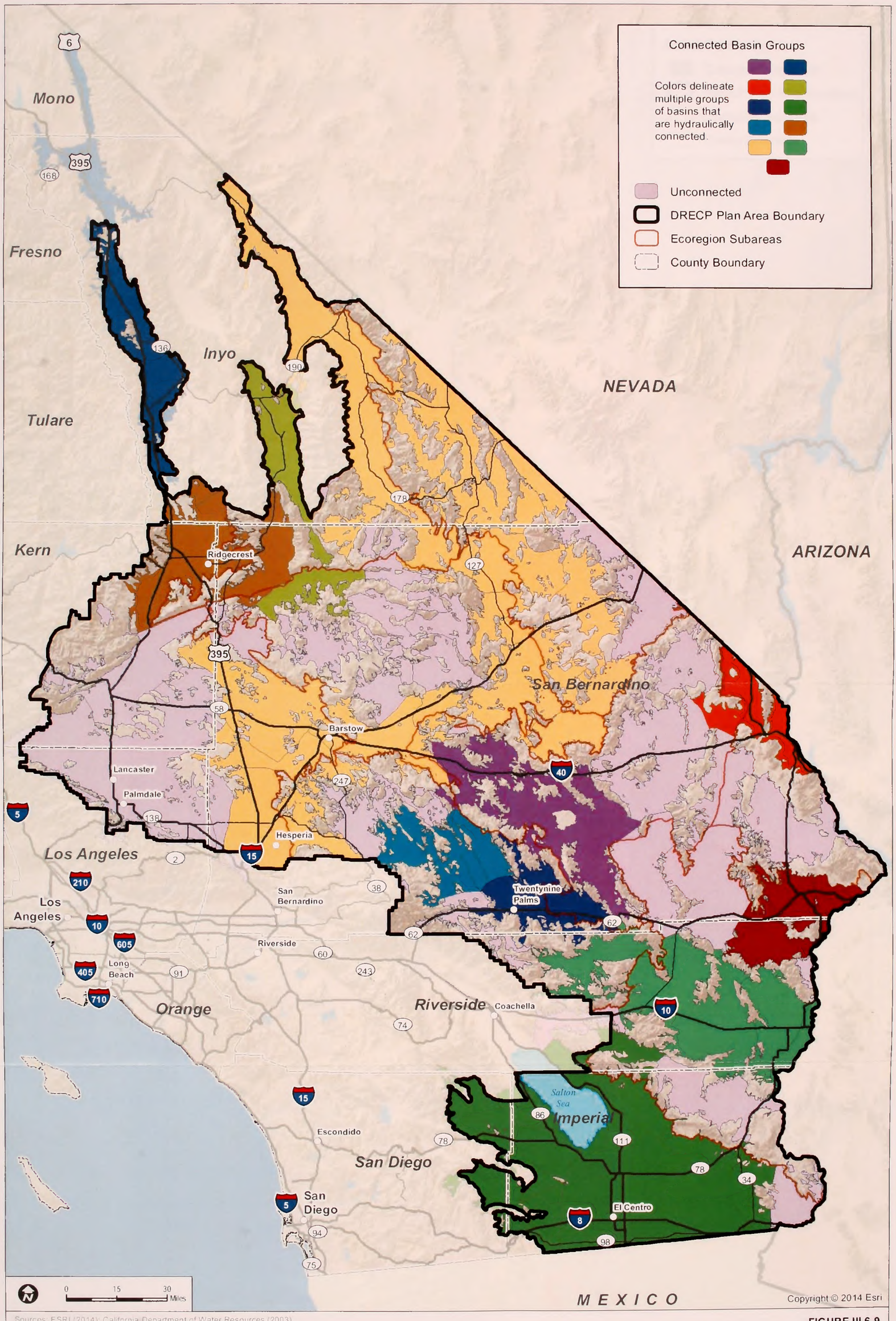
Irrigated Area

Water use in irrigated areas is one indicator of competition for groundwater. Where groundwater is used for irrigation, large areas of cropland indicate relatively heavy groundwater use. It also means that those users could be impacted by new future demands for additional groundwater. The current existence of large areas irrigated with groundwater does not necessarily mean that today's extraction rates are sustainable.

Figure III.6-10 shows cropland in the Plan Area. This figure shows that agriculture is predominantly in basins along the Colorado River, in Imperial Valley, along the Mojave River, and in Antelope Valley. All of these areas are supplied by imported surface water sources in addition to local groundwater. Some of these basins are adjudicated and administered through Watermasters. The inferred relatively large amount of water used in these basins does not necessarily imply either overdraft or, conversely, the long-term sustainability of current groundwater pumping. It rather illustrates the competition between water users. In adjudicated basins, Watermasters may require that new users acquire an existing right or allocation to access water.

Developed Area

Urban and rural land development other than agriculture also drives water demand. Water-dependent mining in the Bristol Lake area, as one example, extracts calcium and sodium chloride from a shallow aquifer. Large developed areas in a basin can also indicate strong competition among a large number of existing groundwater users for water yield. Developed lands in the Plan Area are shown in Figure III.6-11. The main developed areas, principally cropland, fall within many of the same basins but with slightly different proportions. The upper Mojave River Valley and portions of the Antelope Valley are highly developed areas, while the Imperial Valley and Colorado River floodplain areas are sparsely developed. Developed areas with little agriculture include the Morongo Valley–Yucca Valley–Twentynine Palms belt along Highway 62 in the central-west part of the Plan Area, and the Borrego Springs area in eastern San Diego County.

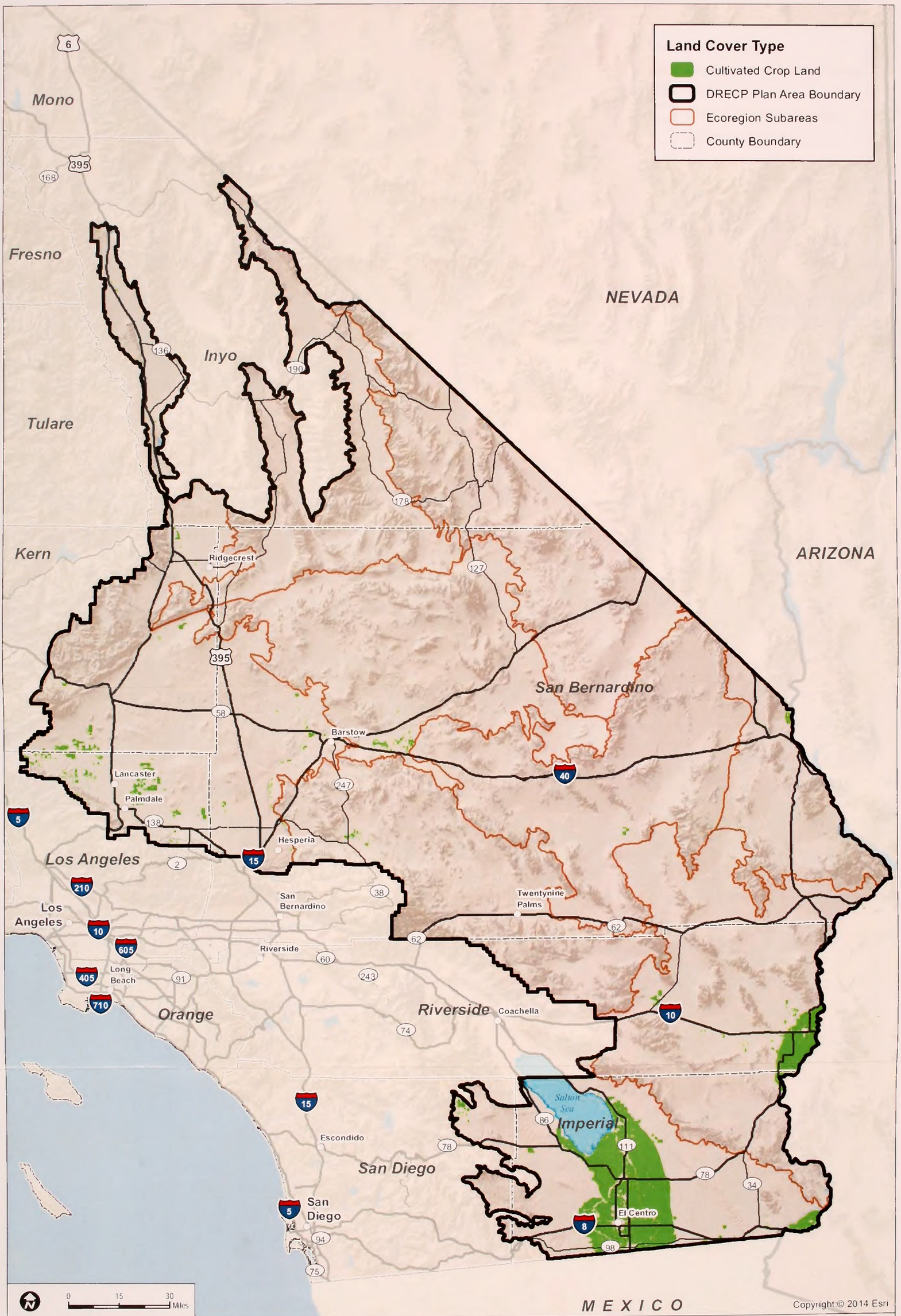


Sources: ESRI (2014); California Department of Water Resources (2003)

FIGURE III.6-9

Groundwater Basins with Evidence of Hydraulic Interconnection

INTENTIONALLY LEFT BLANK

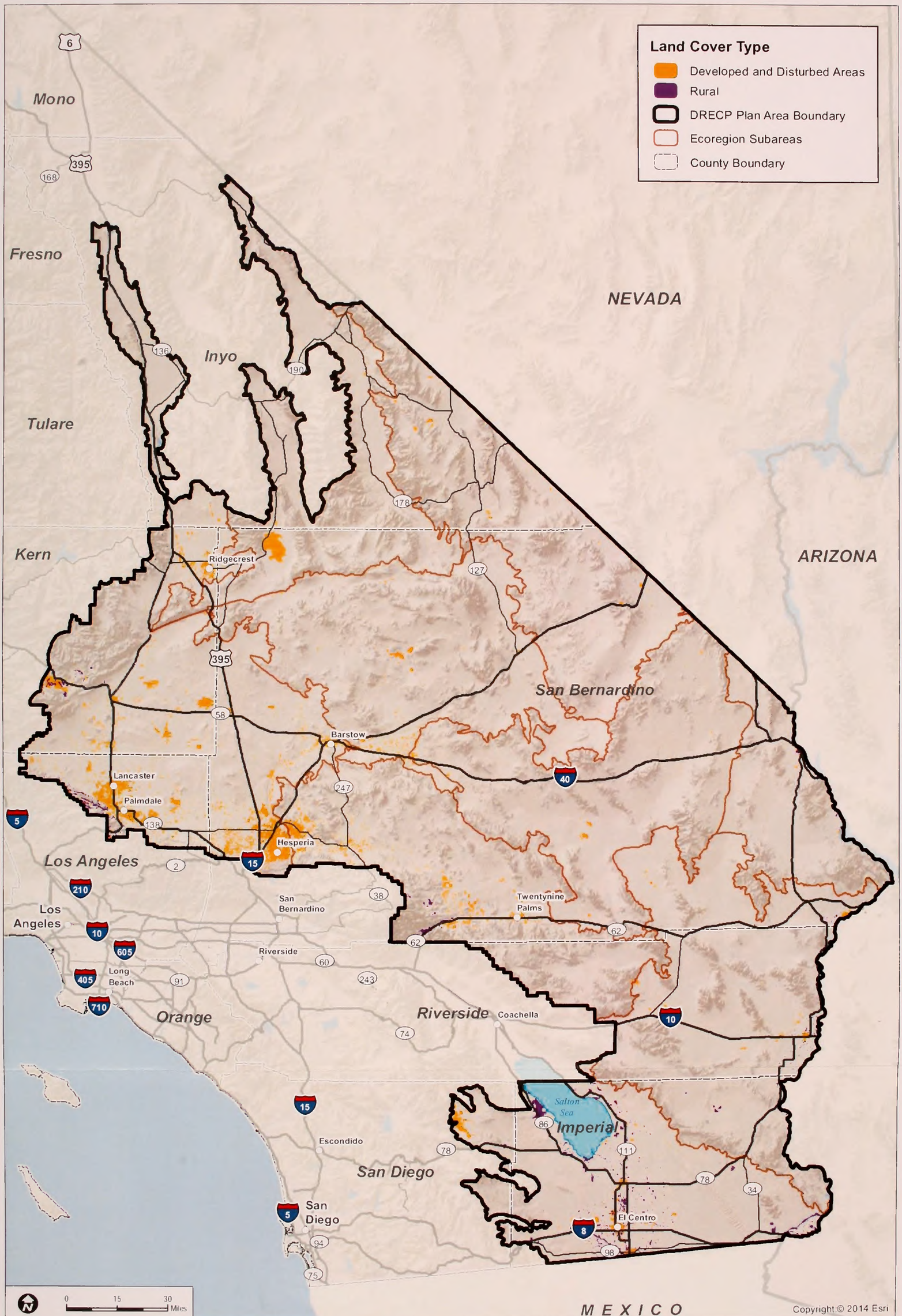


Sources: Modified from Figure II-5i, Preliminary Conservation Framework Strategy Report, DUDEK, May 2011; ESRI (2014)

FIGURE III.6-10

Cultivated Crop Land

INTENTIONALLY LEFT BLANK



Sources: Modified from Figure II-5j, Preliminary Conservation Framework Strategy Report, DUDEK, May 2011; ESRI (2014)

FIGURE III.6-11

Developed and Disturbed Lands

INTENTIONALLY LEFT BLANK

Water-Level Monitoring Wells

The number and distribution of water-supply wells, similar to land use, closely mirror groundwater use. And although water-level monitoring is not directly tied to basin water balance, it does indicate that local stakeholders are attempting to quantify and manage groundwater use.

Figure III.6-12 shows the locations of wells within the Plan Area that have measurements in the CDWR Water Data Library. Most of these are water supply wells, and their spatial pattern closely matches the developed land (see Figure III.6-11). Similar to land use factors, the number and distribution of these monitoring locations may indicate areas with existing groundwater users and a subsequent high competition for water.

Estimated Groundwater Use

As part of the CASGEM Program legislation, CDWR is required to prioritize California groundwater basins to identify, evaluate, and determine the need for both seasonal and long-term groundwater-level monitoring. Estimated groundwater use was one factor in the statewide groundwater volume information presented in the 2005 DWR Land and Water Use (LWU) survey data, which were compiled based on county boundaries and Detailed Analysis Unit areas. The CDWR region staff verified groundwater use, by basin, through aerial photography, local groundwater management plans, Bulletin 118 data, and other available information sources. However, detailed evaluations are required for project-specific assessments. For purposes of this regional assessment, the CDWR results provide approximate values representing general basin-by-basin trends within the Plan Area.

Figure III.6-13 shows groundwater use in the Plan Area, by basin. The highest-use levels are in western basin areas with substantial areas of disturbed lands (Figure III.6-11), and for wells with water-level data (Figure III.6-12).

III.6.3.4 Subsidence

III.6.3.4.1 Water Supply Well Extractions

When groundwater is pumped from an aquifer, the fluid pressure in voids between the sediment grains decreases so that sediment beds can compact. The compaction of sediment beds causes lowering of the overlying land surface elevation, or subsidence. Measureable amounts of subsidence are typically associated with large water-level declines over a broad area. Subsidence is a potential risk in most or all of the Plan Area groundwater basins.

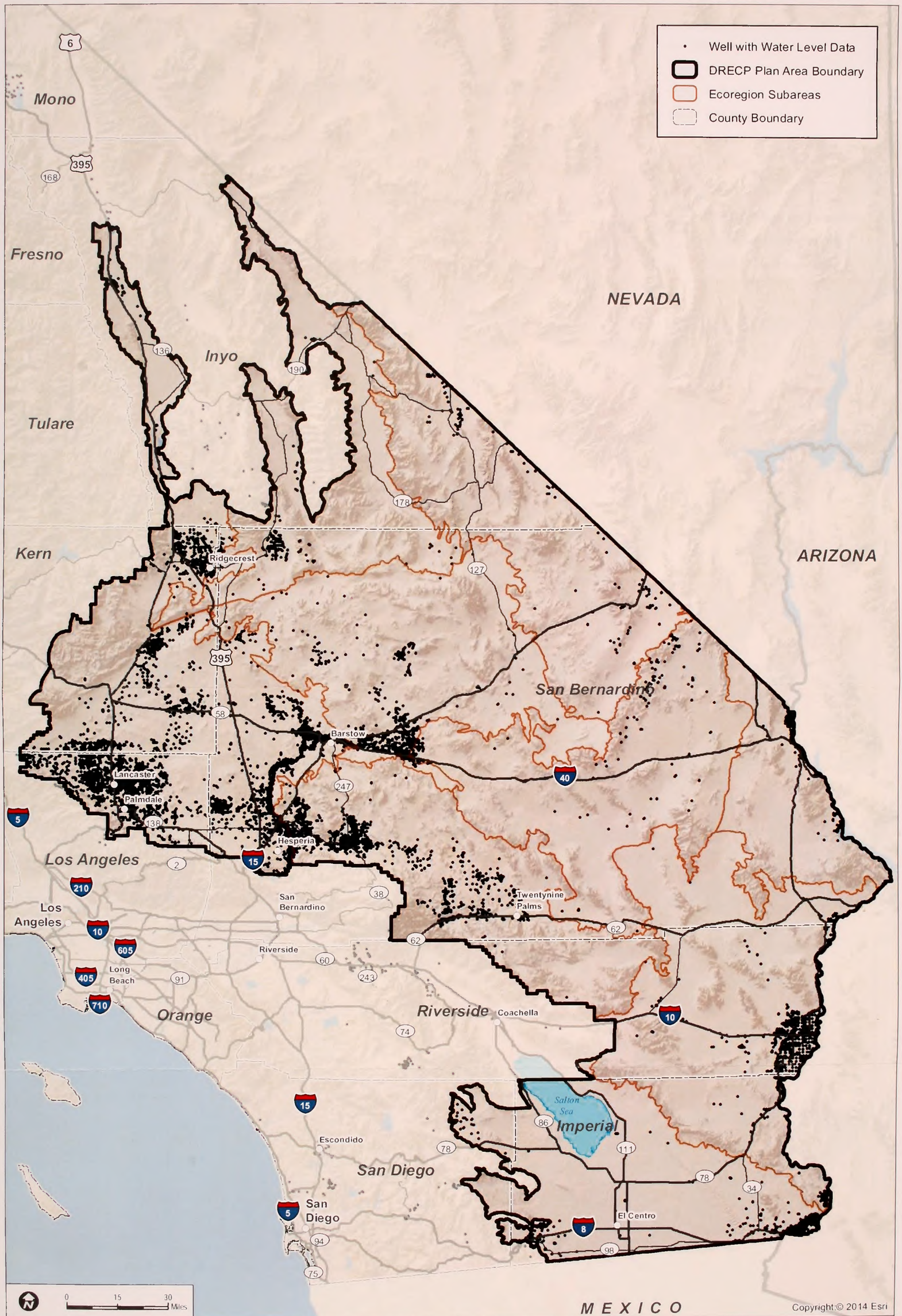
The degree of subsidence depends upon the amount of groundwater-level lowering and the compressibility of sediments. In the western portion of the Plan Area, groundwater levels in some basins have declined more than 100 feet from predevelopment conditions. For example, in the Antelope Valley up to 6 feet of subsidence occurred between 1950–1990 from groundwater pumping and associated water-level declines of up to 90 feet (Londquist et al. 1993). There have also been water-level declines of many tens of feet during the second half of the 20th century in basins along the Mojave River, and farther east from the Lucerne Valley to Morongo Valley Region. Concurrent geodetic monitoring was only implemented in the Lucerne Valley Basin, however, where up to 2 feet of subsidence were recorded (Sneed et al. 2003).

The effects of subsidence can sometimes be obvious (with ground fissures and changes in surface drainage patterns), and largely undetected in other areas. Subsidence can continue for decades even in the absence of further water-level declines because substantial time is required for pore-pressures within the clay beds and adjacent aquifer materials to equalize. Subsidence creates an irreversible loss in aquifer storage capacity.

III.6.3.4.2 Geothermal Extractions

Most existing geothermal energy production in the Plan Area is in or near Imperial Valley, where commercial geothermal production dates back to 1961 (Singer 2004). Proposed additional geothermal leasing by the BLM is in the adjacent West Chocolate Mountains area (Bureau of Land Management 2011). The BLM is also considering leases in the area of the Coso Geothermal Field, north of Ridgecrest, in the Haiwee Geothermal Leasing Area. Depending on local hydrogeology, well depth, and method of operation, withdrawal of fluids by geothermal wells can potentially cause both downward water leakage from overlying water supply aquifers and land subsidence.

The risk of inducing downward flow to geothermal wells from overlying water-supply aquifers is typically minimized by the large depth difference between most water supply wells and most geothermal wells. For example, water supply wells in the Imperial Valley area are typically 350-1,300 feet deep (Loeltz et al. 1975; Alward and Shatz 2009), whereas geothermal wells in the nearby Salton Sea, New Truckhaven and Orita project areas are 3,000-14,325 feet deep, with typical depths in the 5,000-8,000 foot range (Singer 2004; Nevada Geothermal Inc. 2011; Ram Power Corporation 2010). The potential for deep fluid extraction to affect shallower aquifers also depends on the type and extent of geologic layers in the depth interval between the geothermal well screen and nearby water well screens.

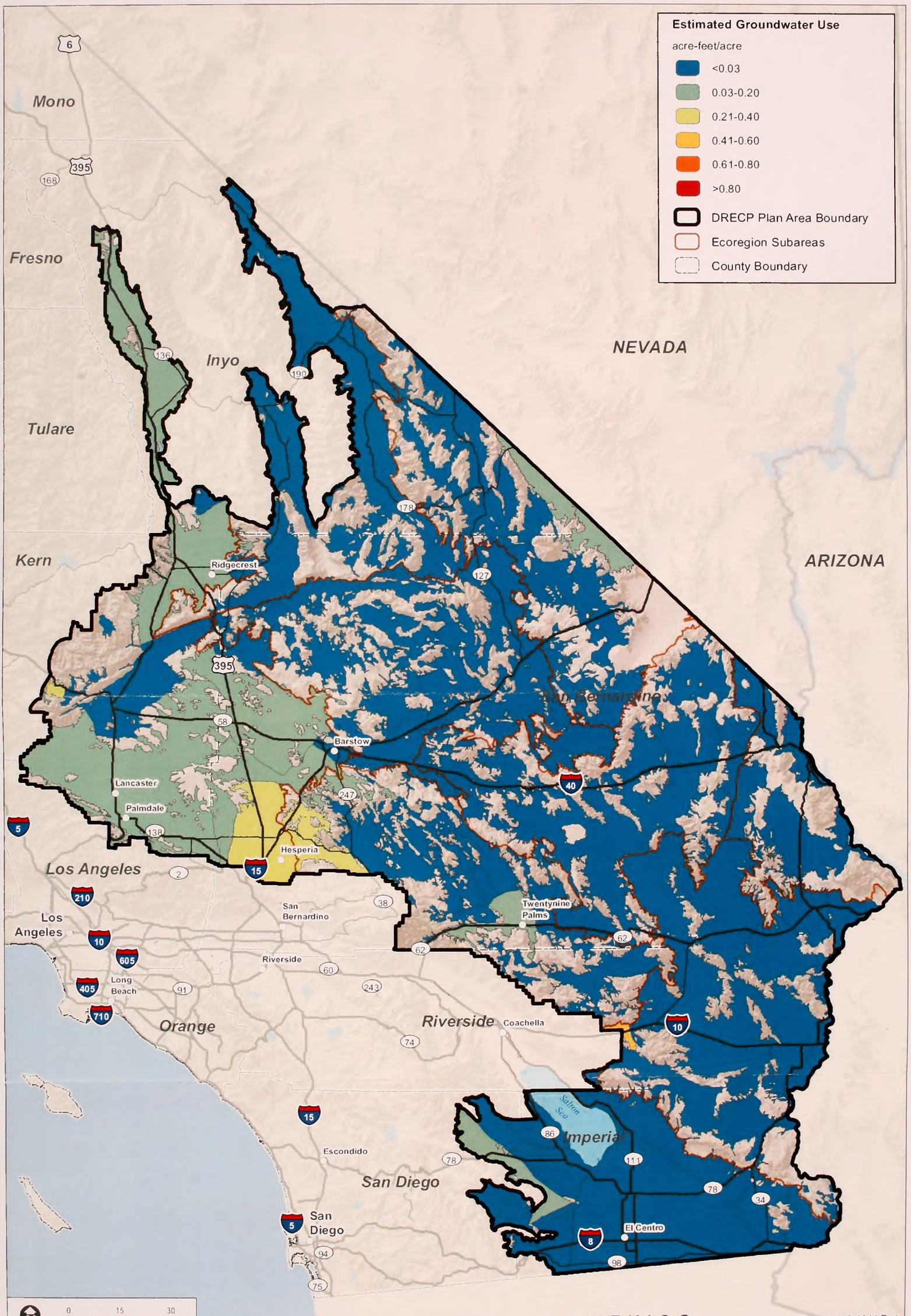


Sources: ESRI (2014); California Department of Water Resources' Water Data Library (www.water.ca.gov/waterdatalibrary)

FIGURE III.6-12

Locations of Wells with Water Level Data

INTENTIONALLY LEFT BLANK



Sources: DWR, California Groundwater Elevation Monitoring, Basin Prioritization Process, December 2013; ESRI (2014)

FIGURE III.6-13

Estimated Groundwater Use

INTENTIONALLY LEFT BLANK

All basins in the Plan Area are at risk of subsidence (Bureau of Land Management 2008), and concerns over that issue caused long delays in development of the Imperial Valley geothermal fields. In extreme cases, geothermal well operation has caused up to 42 feet of subsidence in other parts of the world (Wairakei, New Zealand), but so far there is evidence of little if any geothermal subsidence in the Imperial Valley (Northern Arizona University 2011).

III.6.3.5 Water Quality

III.6.3.5.1 Groundwater Salinity

Groundwater salinity can significantly vary within individual groundwater basins, particularly in basins with discharging playas (see Figure III.6-8 for playa locations). Highly saline playas are characteristic of the Plan Area. Groundwater evaporation from the playa surface leaves salts behind, which accumulate over geologic time to form brines many times saltier than seawater. These hypersaline brines are generally restricted to shallow aquifers in the immediate vicinity of the playa. However, groundwater pumping from wells in a basin can alter—and even reverse—natural groundwater flow directions and cause the brines to migrate away from the playa into areas that formerly contained fresh groundwater.

Figure III.6-14 shows an approximate map of average salinity in the Plan Area groundwater basins tabulated from basin descriptions in Bulletin 118 (California Department of Water Resources 2003). Salinity is represented here as the concentration of total dissolved solids (TDS). Water quality data are typically very sparse; some basins have no data and others have only one or two data points. Basins with several data points often include one or two values that are much higher than the rest. In some cases, these outliers were omitted from averaging so that the result would not be biased by local high-salinity conditions associated with a single playa. The color-coded salinity ranges correspond to suitability for beneficial uses. TDS concentrations less than 1,000 milligrams per liter (mg/L) meet secondary drinking water standards (for short-term use), and concentrations less than 3,000 mg/L are generally considered usable for irrigation.[3] Higher-salinity ranges are also shown, but those averages might be influenced by relatively high outliers.

About 6% of the sub-basin areas in the Cadiz Valley and Chocolate Mountains ecoregion subarea are disturbed (agriculture or developed areas). The Palo Verde Valley and Palo Verde Mesa are the most disturbed, with 92% and 21% of their areas already disturbed, respectively. Most of the disturbance is for agriculture (82%), and the Palo Verde Valley Basin receives imported water. Five of the sub-basins have no mapped disturbance:

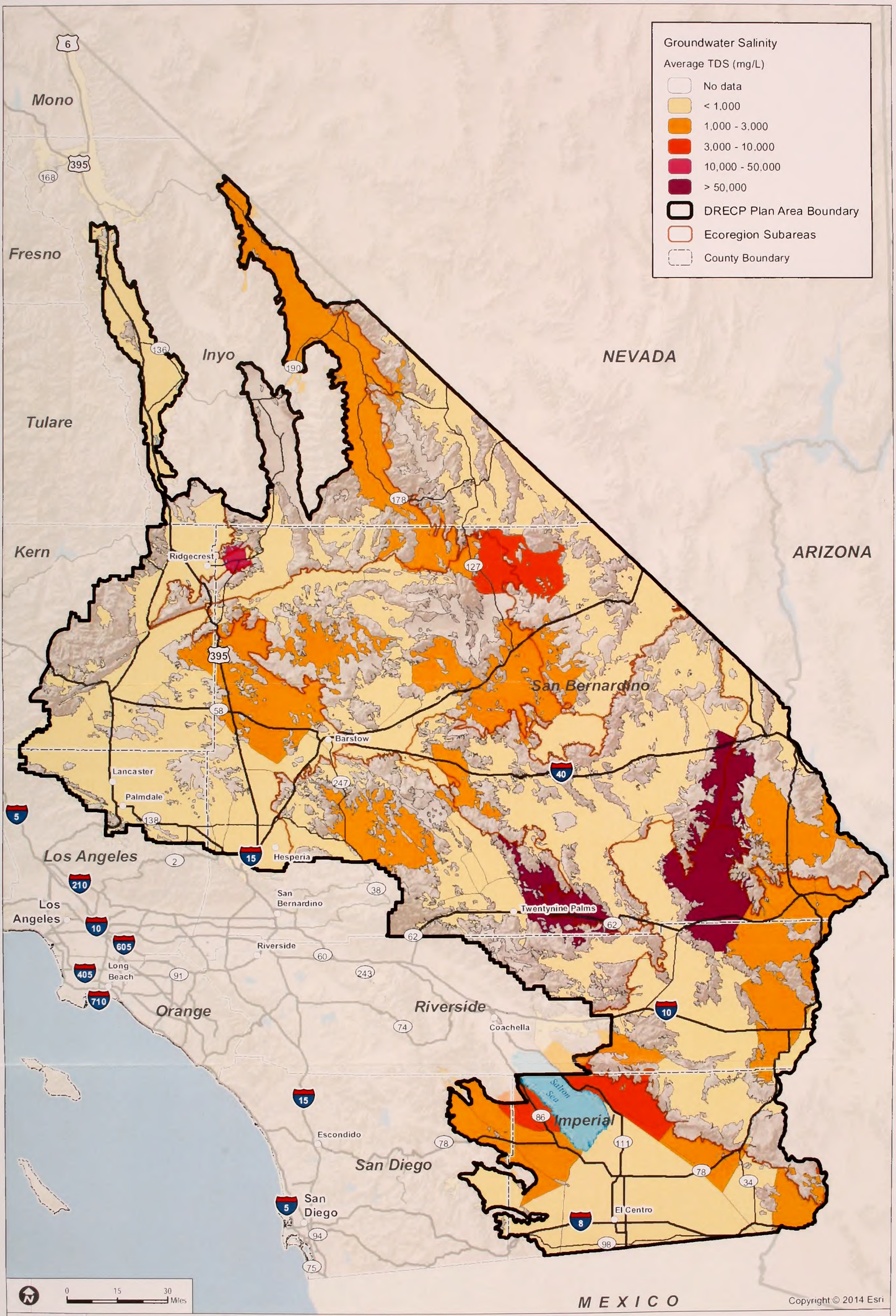
[3] 1 milligram per liter (mg/l) is the same as 1 part per million (ppm).

Bristol Valley, Chocolate Valley, East Salton Sea, Ogilby Valley, and Pinto Valley. A proposed aquifer storage and recovery project, the Cadiz Valley Water Project, is expected to produce billions of gallons of groundwater and storage space to bank surface water. The EIR for this project was certified by the Santa Margarita Water District (lead agency) in July 2012, and was approved by San Bernardino County in October 2012. The most significant renewable energy project development is in the Chuckwalla Valley, where more than 6,000 acres and over 800 megawatts of solar thermal and solar PV are either under construction or operational.

Within the Cadiz Valley and Chocolate Mountains ecoregion subarea, 10 of the 18 basins are partly or entirely within the Colorado River Aquifer, and 4 additional basins are possibly tributary to the river aquifer. Twelve of the basins within this ecoregion subarea are hydraulically connected, meaning that water may be exchanged between adjacent basins as subsurface flow, and one basin, Cadiz Valley, has a discharging playa.

The regional average annual precipitation recharge estimate for the Cadiz Valley and Chocolate Mountains ecoregion subarea is about 4,000 acre-feet/year (Figure III 6-7). This recharge is the total for areas within the ecoregion subarea, including mountain block areas between groundwater basins. However, it is a minimum estimate for recharge because it excludes potential irrigation return flows and rainfall in watershed areas outside the overall general Plan Area. The runoff from these outside watershed areas may generate substantial amounts of additional recharge as either percolating runoff or subsurface inflow. Additional discussion of the rainfall recharge estimates appears in Section III.6.3.3.2.

Groundwater storage capacity of the Cadiz Valley and Chocolate Mountain ecoregion subarea is approximately 43 million acre-feet (almost 19 acre-feet per acre [AF/Ac]), which was calculated by prorating the Bulletin 118 basin storage capacities on a per-area basis. Reported well yields range from 25 to 1,800 gpm and average 450 gpm; 4 of the 18 basins (22%) have no reported well-yield data. More than 900 wells with water-level data in the CDWR data library are in this ecoregion subarea, and most are located in the Palo Verde Mesa (53%) and Palo Verde Valley (23%) basins.



Sources: ESRI (2014); California Department of Water Resources (2003)

FIGURE III.6-14

Average Groundwater Salinity

INTENTIONALLY LEFT BLANK

Average TDS concentrations in the Cadiz Valley and Chocolate Mountains ecoregion subarea reportedly range from 300 mg/L to almost 150,000 mg/L. The predominant ions present in the groundwater include sodium, calcium, bicarbonate, chloride, and sulfate, and the concentrations of these ions can be high in some basins. In areas near playas, the groundwater is typically high in sodium and chloride. Significant concentrations of boron, fluoride, arsenic, and selenium are reportedly present in water extracted from some of the basins; uranium and radon concentrations in the Orocopia Valley are reported to be higher than allowable for drinking water standards (CDWR Bulletin 118).

Table III.6-2
California Department of Water Resources Basins in the Cadiz Valley and Chocolate Mountains Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,5]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,5]		
			Sub-Basin Area	*Disturbed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin*[3,5]
7-34	Amos Valley	129,900	3,300	100	0
7-37	Arroyo Seco Valley	256,500	256,500	2,200	0
7-8	Bristol Valley	496,600	100	0	0
7-7	Cadiz Valley	269,800	239,900	1,200	0
7-41	Calzona Valley	80,600	78,000	3,900	0
7-32	Chocolate Valley	129,100	63,400	0	0
7-5	Chuckwalla Valley	601,500	593,200	10,800	6,100
7-33	East Salton Sea	194,800	15,700	0	0
7-35	Ogilby Valley	133,200	500	0	0
7-31	Orocopia Valley	96,200	16,600	500	0
7-39	Palo Verde Mesa	225,000	225,000	47,700	200
7-38	Palo Verde Valley	73,000	72,800	66,800	0
7-6	Pinto Valley	182,400	2,100	0	0
7-40	Quien Sabe Point Valley	25,100	25,100	1,000	0
7-4	Rice Valley	188,100	186,900	1,000	0
7-42	Vidal Valley	137,700	127,700	1,600	0
7-3	Ward Valley	557,600	352,900	900	0
7-36	Yuma Valley	124,000[4]	21,900	100	0

1 Groundwater basin areas were calculated using ArcGIS and the basin shapefile available from CDWR (http://www.water.ca.gov/groundwater/bulletin118/gwbasin_maps_descriptions.cfm). The calculated basin areas can be different than reported in the CDWR basin descriptions.

2 The basin area within each DRECP ecoregion subarea, herein referred to as the sub-basin, was determined by intersecting the CDWR groundwater basin shapefile with the DRECP ecoregion subarea boundary.

[3] Reported acres of existing renewable energy projects having mapped locations within the sub-basin area. Note that the reported acres do not delineate between the renewable energy project footprint located within the CDWR basin boundary and portions of the footprint that might extend outside the basin boundary.

[4] The area reported in Bulletin 118 is only 3,780 acres. Based on the map information provided by the CDWR, the acreage reported in Bulletin 118 appears to be wrong.

[5] The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

III.6.3.6 Imperial Borrego Valley Ecoregion Subarea

The Imperial Borrego Valley ecoregion subarea contains all or portions of 12 mapped groundwater basins totaling 2,170,000 acres. Table III.6-3 lists the basin names, total basin areas, and sub-basin areas. Additionally, Table III.6-3 shows sub-basin areas that are disturbed by either agriculture or other developed land uses, and the footprint for existing renewable energy projects, in acres, where mapped locations fall within the sub-basins (see Figure III.1-2[a] and Figure III.1-2[b] for a map of project locations and ecoregion subarea boundaries).

Six of the 12 basins listed in Table III.6-3 are almost entirely within the Imperial Borrego Valley ecoregion subarea, or at least 90% of each of these basins. These 6 sub-basins represent 71% of the Borrego Valley ecoregion subarea: Amos Valley, Borrego Valley, Coyote Wells Valley, Imperial Valley, Ocotillo–Clark Valley, and Ogilby Valley basins. Of the remaining 6, 2 sub-basins represent less than 10% of their total basin area: Chocolate Valley and Coachella Valley-Indio. These two sub-basins together represent less than 0.5% of the ecoregion subarea.

Almost 30% of the sub-basin areas in the Imperial Borrego Valley ecoregion subarea are disturbed land areas. Most of the disturbance is for agriculture (85%), and three basins (the Coyote Wells Valley, Imperial Valley, and Ocotillo–Clark Valley) receive imported water. The Imperial Valley is the most disturbed sub-basin, with 56% of its area disturbed. Only two sub-basins have little to no disturbance – Chocolate Valley and Vallecito-Carrizo Valley. The most significant renewable energy project development is in the Imperial Valley (8,500 acres), which includes some acreage in the West Salton Sea. Less acreage of existing renewable energy project development is in Borrego Valley and Coyote Wells Valley (less than 100 acres each).

Within the Imperial Borrego Valley ecoregion subarea all of the basins are hydraulically connected (groundwater may flow between the connected basins) and groundwater in some areas flows to the Salton Sea. Three of the 12 basins are partly or entirely within the Colorado River Aquifer, and one additional basin might be tributary to the Colorado River Aquifer.

Table III.6-3
California Department of Water Resources Basins in the Imperial Borrego Valley Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,5]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,5]		
			Sub-Basin Area	*Disturbed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin*[3]
7-34	Amos Valley	129,900	126,600	2,000	0
7-24	Borrego Valley	152,500	139,700	14,800	< 100
7-32	Chocolate Valley	129,100	8,800	0	0
7-21.01	Coachella Valley-Indio	297,000	1,000	300	0
7-29	Coyote Wells Valley	145,600	134,800	2,200	< 100
7-33	East Salton Sea	194,800	174,000	22,100	0
7-30	Imperial Valley	957,600	956,100	539,700	8,500
7-25	Ocotillo–Clark Valley	222,100	211,000	17,700	0
7-35	Ogilby Valley	133,200	132,500	2,900	0
7-28	Vallecito–Carrizo Valley	121,700	96,900	< 100	0
7-22	West Salton Sea[4]	105,300	87,000	12,800	0
7-36	Yuma Valley	124,000	102,000	25,600	0

1 Groundwater basin areas were calculated using ArcGIS and the basin shapefile available from CDWR (http://www.water.ca.gov/groundwater/bulletin118/gwbasin_maps_descriptions.cfm). The calculated basin areas can be different than reported in the CDWR basin descriptions.

2 The basin area within each DRECP ecoregion subarea, herein referred to as the sub-basin, was determined by intersecting the CDWR groundwater basin shapefile with the DRECP ecoregion subarea boundary.

3 Reported acres of existing renewable energy projects having mapped locations within the sub-basin area. Note that the reported acres do not delineate between the renewable energy project footprint located within the CDWR basin boundary and portions of the footprint that might extend outside the basin boundary.

4 Groundwater storage capacity not reported for this basin in CDWR Bulletin 118.

5 The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

The regional average annual precipitation recharge estimate for the Imperial Borrego Valley ecoregion subarea is less than 800 acre-feet/year (Figure III 6-7). This number is the total for areas within the ecoregion subarea, including mountain block areas between groundwater basins. However, the recharge estimate is a minimum value because it excludes potential irrigation return flows and rainfall in watershed areas located outside the Plan Area. The runoff from these outside watershed areas may generate substantial amounts of additional recharge as either percolating runoff or subsurface inflow. Additional discussion of the rainfall recharge estimates appears in Section III.6.3.3.2.

Groundwater storage capacity of the Imperial Borrego Valley ecoregion subarea is reported for 11 of the 12 groundwater basins. Storage capacity for the West Salton Sea is not reported. The groundwater storage capacity of these 11 basins is approximately 38 million acre-feet (18 AF/Ac), which is an estimate calculated by pro-rating Bulletin 118 basin storage capacities on a per-area basis. Reported well yields range from 40 to 1,880 gpm; five 5 of the 12 basins have no reported well-yield data. Two of the basins (Imperial Valley and West Salton Sea) contain geothermal extractions. More than 500 wells with water-level data in the CDWR Water Data Library are in this ecoregion subarea. Most of the wells are found in the Yuma Valley (59%), Coyote Wells Valley (13%), Imperial Valley (12%), and Ogilby Valley (10%) basins.

Average TDS concentrations in the Imperial Borrego Valley ecoregion subarea basins reportedly range from 680 to 5,800 mg/L. Most of the basins have high TDS values, and the water is marginal to poor for domestic use. The predominant ions present in the groundwater include sodium, chloride, and sulfate, and the concentrations of these ions can be high. There reportedly are also significant concentrations of boron, fluoride, and nitrate in some basins; the Imperial Valley groundwater quality is also degraded by recharge from the New River.

III.6.3.7 Kingston and Funeral Mountains Ecoregion Subarea

The Kingston and Funeral Mountains ecoregion subarea contains all or portions of 15 mapped groundwater basins, with a combined area totaling 1,490,000 acres. Table III.6-4 lists the basin names, total basin areas, and sub-basin areas within this ecoregion subarea. Additionally, Table III.6-4 reports the sub-basin areas that are disturbed by either agriculture or other developed land uses, and the footprint of existing renewable energy projects, in acres, where mapped locations fall within the sub-basins (see Figure III.1-2[a] and Figure III.1-2[b] for a map of project locations and ecoregion subarea boundaries).

Table III.6-4
Department of Water Resources Basins in the
Kingston and Funeral Mountains Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,5]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,5]		
			Sub-Basin Area	*Developed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin*[4]
6-79	California Valley[3]	58,100	58,100	< 100	0
6-18	Death Valley	919,800	43,500	400	0
6-85	Gold Valley[3]	3,200	3,200	0	0

Table III.6-4
Department of Water Resources Basins in the Kingston and Funeral Mountains Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,5]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,5]		
			Sub-Basin Area	*Developed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin*[4]
6-84	Greenwater Valley[3]	59,800	59,800	600	0
6-30	Ivanpah Valley	197,900	195,700	800	3,500[4]
6-31	Kelso Valley	254,600	115,300	100	0
6-21	Lower Kingston Valley	239,600	141,700	0	0
6-29	Mesquite Valley	88,100	88,000	200	0
6-20	Middle Amargosa Valley	389,500	389,400	3,500	0
6-28	Pahrump Valley	92,800	92,800	100	0
6-86	Rhodes Hill Area[3]	15,600	13,500	0	0
6-23	Riggs Valley	87,500	9,800	0	0
6-34	Silver Lake Valley	35,200	2,900	0	0
6-33	Soda Lake Valley	379,800	100,000	0	0
6-22	Upper Kingston Valley	176,700	176,700	800	0

1 Groundwater basin areas were calculated using ArcGIS and the basin shapefile available from CDWR (http://www.water.ca.gov/groundwater/bulletin118/gwbasin_maps_descriptions.cfm). The calculated basin areas can be different than reported in the CDWR basin descriptions.

2 The basin area within each DRECP ecoregion subarea, herein referred to as the sub-basin, was determined by intersecting the CDWR groundwater basin shapefile with the DRECP ecoregion subarea boundary.

3 Groundwater storage capacity not reported for these basins in CDWR Bulletin 118.

4 Reported acres of existing renewable energy projects having mapped locations within the sub-basin area. Note that the reported acres do not delineate between the renewable energy project footprint located within the CDWR basin boundary and portions of the footprint that might extend outside the basin boundary.

5 The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Eight of the 15 basins listed in Table III.6-4 are almost entirely within the Kingston and Funeral Mountains ecoregion subarea (90% or more of their basin areas are located in the ecoregion subarea). These 8 sub-basins represent 43% of the Funeral Mountains ecoregion subarea. These are sub-basins of the California Valley, Gold Valley, Greenwater Valley, Ivanpah Valley, Mesquite Valley, Middle Amargosa Valley, Pahrump Valley, and Upper Kingston Valley basins. Of the remaining 7 sub-basins, 2 represent less than 10% of their

basins (Death Valley and Silver Lake Valley). These seven sub-basins together represent 17% of the ecoregion subarea.

Less than 1% of the sub-basin areas in the Kingston and Funeral Mountains ecoregion subarea are disturbed. There is no agricultural disturbance, and no basins receive imported water. Six of the 15 sub-basins have no mapped disturbance: Gold Valley, Lower Kingston Valley, Rhodes Hill Area, Riggs Valley, Silver Lake Valley, and Soda Valley. The only existing renewable energy project development is in the Ivanpah Valley (3,500 acres).

All of the basins within the Kingston and Funeral Mountains ecoregion subarea are hydraulically connected (groundwater may flow between the connected basins), and four basins have discharging playas: Death Valley, Mesquite Valley, Middle Amargosa Valley, and Soda Lake Valley basins. Generally, groundwater flow in this region has two components: deep groundwater flow associated with the regional carbonate aquifer system, and flow in the overlying alluvial basins from the Mojave River drainage area north into the Amargosa/Death Valley area. Both of these flow paths terminate in the groundwater sink that is Death Valley. The Amargosa River is located in the Lower Kingston Valley and Middle Amargosa Valley basins, and the river has been designated a Wild and Scenic River. There are concerns that groundwater extraction by projects may deprive the river of flow needed to sustain the resources protected by this designation.

The regional average annual precipitation recharge estimate for the Kingston and Funeral Mountains ecoregion subarea is about 11,000 acre-feet/year (Figure III 6-7). This number is the total for recharge within the ecoregion subarea, including mountain block areas between groundwater basins. However, the estimate is a minimum value because it excludes precipitation in watershed areas outside the Plan Area. The runoff from these outside watershed areas may generate substantial amounts of additional recharge as either percolating runoff or subsurface inflow. Discussion of the rainfall recharge estimates appears in Section III.6.3.3.2. Additionally, the Kingston and Funeral Mountains ecoregion subarea receives flow from a regional carbonate aquifer adjoining areas in Nevada, including the Upper Amargosa Valley and the Pahrump Valley. This component of recharge is not included in the above estimate.

Groundwater storage capacity is reported for 11 of the 15 groundwater basins in the Kingston and Funeral Mountains ecoregion subarea. The groundwater storage capacity of these 11 basins is approximately 21 million acre-feet (15 AF/Ac), which was calculated by pro-rating Bulletin 118 basin storage capacities on a per-area basis. Reported well yields range from 24 to 2,500 gpm; eight of the 15 basins have no reported well-yield data. More than 100 wells with water level data reported in the CDWR Water Data Library are in this ecoregion subarea, and most are in only three 3 of the 15 basins: Middle Amargosa Valley (51%), Ivanpah Valley (25%), and Pahrump Valley.

Average TDS concentrations in the Kingston and Funeral Mountains ecoregion subarea reportedly range from 340 to 6,963 mg/L. Predominant ions in the groundwater include sodium, bicarbonate, calcium, magnesium, and sulfate, and the concentrations of these ions can be high in some basins. In areas near playa lakes, the groundwater is typically high in sodium and chloride. There are also reportedly significant concentrations of fluoride, boron, and chloride in some basins.

III.6.3.8 Mojave and Silurian Valley Ecoregion Subarea

The Mojave and Silurian Valley ecoregion subarea contains all or portions of 28 mapped groundwater basins, with a combined area totaling 1,784,000 acres. Table III.6-5 lists the basin names, total basin areas, and sub-basin areas within this ecoregion subarea. Additionally, Table III.6-5 reports the sub-basin areas that are disturbed by either agriculture or other developed land uses, and the footprint of existing renewable energy projects, in acres, where mapped locations fall within the sub-basins (see Figure III.1-2[a] and Figure III.1-2[b] for a map of project locations and ecoregion subarea boundaries).

Fourteen of the 28 basins listed in Table III.6-5 are almost entirely within the Mojave and Silurian Valley ecoregion subarea (90% or more of the area of each of these basins). These 14 sub-basins represent 32% of the Mojave and Silurian Valley ecoregion subarea. These are sub-basins of the Avawatz Valley, Bicycle Valley, Coyote Lake Valley, Cronise Valley, Denning Spring Valley, Goldstone Valley, Grass Valley, Langford Valley-Langford Well Lake, Langford Valley-Irwin, Leach Valley, Pilot Knob Valley, Red Pass Valley, Silver Lake Valley, Superior Valley basins. Of the remaining 14 sub-basins, seven represent less than 10% of their basins: Cady Fault Area, Death Valley, Fremont Valley, Harper Valley, Lavic Valley, Owl Lake Valley, and Searles Valley. These 7 sub-basins together represent about 3% of the ecoregion subarea.

Less than 2% of the sub-basin areas in the Mojave and Silurian Valley ecoregion subarea is disturbed. Agriculture represents 28% of the disturbed land area, and only one of the basins (Lower Mojave River Valley) receives imported water. Langford Valley-Irwin is the most disturbed, with 30% of its sub-basin disturbed. Eleven sub-basins have no mapped disturbance, and there is no renewable energy development.

Table III.6-5
California Department of Water Resources Basins in the Mojave and Silurian Valley Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,5]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,5]		
			Sub-Basin Area	*Disturbed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin*[3]
6-26	Avawatz Valley	27,600	27,600	0	0
6-25	Bicycle Valley	89,400	89,400	1,600	0
6-90	Cady Fault Area[4]	7,900	600	0	0
6-38	Caves Canyon Valley	72,900	54,800	300	0
6-37	Coyote Lake Valley	88,000	88,000	600	0
6-35	Cronise Valley	126,200	126,200	0	0
6-50	Cuddeback Valley	94,800	18,800	200	0
6-18	Death Valley	919,800	41,800	0	0
6-78	Denning Spring Valley[4]	7,200	7,200	0	0
6-46	Fremont Valley	335,000	17,700	100	0
6-48	Goldstone Valley	28,100	28,100	300	0
6-77	Grass Valley[4]	10,000	10,000	0	0
6-47	Harper Valley	409,200	7,800	< 100	0
6-31	Kelso Valley	254,600	129,000	< 100	0
6-36.01	Langford Valley–Langford Well Lake	19,300	19,300	600	0
6-36.02	Langford Valley–Irwin	10,500	10,500	3,100	0
7-14	Lavic Valley	102,200	4,300	0	0
6-27	Leach Valley	60,900	60,900	300	0
6-21	Lower Kingston Valley	239,600	97,900	0	0
6-40	Lower Mojave Valley	285,300	200,100	17,300	0
6-88	Owl Lake Valley[4]	22,200	600	0	0
6-51	Pilot Knob Valley	138,500	135,900	300	0
6-24	Red Pass Valley	96,200	96,200	200	0
6-23	Riggs Valley	87,500	77,700	0	0
6-52	Searles Valley	196,900	14,700	< 100	0
6-34	Silver Lake Valley	35,200	32,200	0	0

Table III.6-5
California Department of Water Resources Basins in the Mojave and Silurian Valley Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,5]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,5]		
			Sub-Basin Area	*Disturbed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin*[3]
6-33	Soda Lake Valley	379,800	266,200	600	0
6-49	Superior Valley	120,200	120,200	300	0

1 Groundwater basin areas were calculated using ArcGIS and the basin shapefile available from CDWR (http://www.water.ca.gov/groundwater/bulletin118/gwbasin_maps_descriptions.cfm). The calculated basin areas can be different than reported in the CDWR basin descriptions.

2 The basin area within each DRECP ecoregion subarea, herein referred to as the sub-basin, was determined by intersecting the CDWR groundwater basin shapefile with the DRECP ecoregion subarea boundary.

3 Reported acres of existing renewable energy projects having mapped locations within the sub-basin area. Note that the reported acres do not delineate between the renewable energy project footprint located within the CDWR basin boundary and portions of the footprint that might extend outside the basin boundary.

4 Groundwater storage capacity not reported for these basins in CDWR Bulletin 118.

5 The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Thirteen of the basins within the Mojave and Silurian Valley ecoregion subarea are hydraulically connected (groundwater may flow between the connected basins), and 4 basins have discharging playas: Death Valley, Fremont Valley, Searles Valley, and Soda Lake Valley. The Amargosa River is located in the Lower Kingston Valley and Death Valley basins, and the river has been designated a Wild and Scenic River. There are concerns that groundwater extraction by projects may deprive the river of flow needed to sustain the resources protected by this designation.

The regional average annual precipitation recharge estimate for the Mojave and Silurian Valley ecoregion subarea is less than 9,000 acre-feet/year (Figure III 6-7). This number is the total for areas within the ecoregion subarea, including mountain block areas between groundwater basins. However, the estimate is a minimum value because it excludes precipitation in watershed areas outside the Plan Area. The runoff from these outside watershed areas may generate substantial amounts of additional recharge as either percolating runoff or subsurface inflow. Discussion of the rainfall recharge estimates appears in Section III.6.3.3.2.

Groundwater storage capacity is reported for 24 of the 28 groundwater basins in the Mojave and Silurian Valley ecoregion subarea. The groundwater storage capacity of these 24 basins is approximately 40 million acre-feet (23 AF/Ac), which was calculated by pro-rating Bulletin 118 basin storage capacities on a per-area basis. Reported well yields range from 80 to 1,000 gpm; 14 of the 28 basins have no reported well-yield data. More than 750 wells with water-level data in the CDWR Water Data Library are in this ecoregion subarea, and most of these wells are found in Lower Mojave River Valley (70%) and Langford Valley–Irwin (12%).

Average TDS concentrations in the Mojave and Silurian Valley ecoregion subarea range from 418 to 6,963 mg/L. The predominate ions present in the groundwater include sodium, calcium, chloride, sulfate, and bicarbonate. There are also significant concentrations of boron, fluoride, iron, and nitrate in some groundwater basins. The Lower Mojave River Valley Basin contains nine LUST sites and one Superfund site contaminated with TCE, MTBE, BTEX, and other petroleum-based compounds.

III.6.3.9 Owens River Valley Ecoregion Subarea

The Owens River Valley ecoregion subarea contains all or portions of two mapped CDWR groundwater basins; 381,000 acres are within this ecoregion subarea. Table III.6-6 lists the basin names, total basin areas, and sub-basin areas within this ecoregion subarea. Additionally, Table III.6-6 reports the sub-basin areas that are disturbed by either agriculture or other developed land uses, and the footprint of existing renewable energy projects, in acres, where mapped locations fall within the sub-basins (see Figure III.1-2[a] and Figure III.1-2[b] for a map of project locations and ecoregion subarea boundaries).

The Owens River Valley ecoregion subarea contains a portion of only two CDWR groundwater basins, the Owens Valley (53%) and Rose Valley (79%). Less than 2% of these sub-basins are disturbed, and there is no renewable energy development. Neither basin receives imported water. Both basins are hydraulically connected, and the Owens Valley Basin has a discharging playa.

Table III.6-6
California Department of Water Resources Basins in the Owens River Valley Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,4]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,4]		
			Sub-Basin Area	*Disturbed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin*[3]
6-12	Owens Valley	660,700	347,200	5,900	0
6-56	Rose Valley	42,500	33,700	1,000	0

1 Groundwater basin areas were calculated using ArcGIS and the basin shapefile available from CDWR (http://www.water.ca.gov/groundwater/bulletin118/gwbasin_maps_descriptions.cfm). The calculated basin areas can be different than reported in the CDWR basin descriptions.

2 The basin area within each DRECP ecoregion subarea, herein referred to as the sub-basin, was determined by intersecting the CDWR groundwater basin shapefile with the DRECP ecoregion subarea boundary.

3 Reported acres of existing renewable energy projects having mapped locations within the sub-basin area. Note that the reported acres do not delineate between the renewable energy project footprint located within the CDWR basin boundary and portions of the footprint that might extend outside the basin boundary.

4 The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

The regional average annual precipitation recharge estimate for the Owens River Valley ecoregion subarea totals less than 500 acre-feet/year (Figure III 6-7). This relatively small number is for basin boundaries within the Plan Area only, which in the Owens Valley includes only the southern part of the valley floor. As noted in Section III.6.3.3.2, other factors contribute to recharge in groundwater basins within this ecoregion subarea. The Owens Valley Basin receives substantial runoff and groundwater inflow from the Sierra Nevada Mountains, which adjoin the western edge of the basin, and from the northern part of the valley floor, but neither of these areas is within the Plan Area. The recharge from these excluded areas is therefore not included in the rainfall recharge estimate. Recharge in the Owens Valley is therefore likely to be substantially greater than represented in the estimate. A comprehensive study of groundwater conditions in the Owens Valley estimated total recharge at about 190,000 AF/year, of which rainfall recharge on the valley floor contributed only 2,000 AF/year (Danskin 1998).

The groundwater storage capacity of the Owens River Valley ecoregion subarea is almost 18 million acre-feet (46 AF/Ac), which was calculated by pro-rating Bulletin 118 basin storage capacities on a per-area basis. Reported well yields range from 1,870 to 2,700 gpm. Almost 90 wells with water-level data in the CDWR Water Data Library are in this ecoregion subarea, and most of these wells are in the Owens Valley Basin (93%).

Average TDS concentrations in the Owens River Valley ecoregion subarea range from 130 to 350 mg/L, except in areas beneath Owens Lake where groundwater can contain concentrations up to 450,000 mg/L. The predominate ions present in the groundwater include sodium bicarbonate and calcium bicarbonate. There are significant concentrations of boron and fluoride in groundwater produced from some wells.

III.6.3.10 Panamint Death Valley Ecoregion Subarea

The Panamint Death Valley ecoregion subarea contains all or portions of 17 mapped CDWR groundwater basins, with a combined area of 1,391,000 acres. Table III.6-7 lists the basin names, total basin areas, and sub-basin areas. Additionally, Table III.6-7 reports the sub-basin areas that are disturbed by either agriculture or other developed land uses, and the footprint of existing renewable energy projects, in acres, where mapped locations fall within the sub-basins (see Figure III.1-2[a] and Figure III.1-2[b] for a map of project locations and ecoregion subarea boundaries).

Seven of the 17 basins listed in Table III.6-7 are almost entirely within the Panamint Death Valley ecoregion subarea (90% or more of the area of each of these basins is located in the ecoregion subarea). These 7 sub-basins represent 29% of the Panamint Death Valley ecoregion subarea. These are sub-basins of the Brown Mountain Valley, Lost Lake Valley, Owl Lake Valley, Panamint Valley, Searles Valley, Spring Canyon Valley, and Wingate Valley basins. Of the remaining 10 sub-basins, 6 represent less than 10% of their basins: Fremont Valley, Harrisburg Flats, Indian Wells Valley, Leach Valley, Pilot Knob Valley, and Wildrose Canyon Valley basins. These 6 sub-basins together represent less than 2% of the ecoregion subarea.

In the Panamint Death Valley ecoregion subarea, less than 2% of the sub-basin areas are disturbed, and none of the area is disturbed by agriculture; no basins receive imported water. Searles Valley is the most disturbed sub-basin (14% of the sub-basin is disturbed). Ten of the sub-basins have no disturbance: Brown Mountain Valley, Butte Valley, Fremont Valley, Harrisburg Flats, Leach Valley, Lost Lake Valley, Owl Lake Valley, Rhodes Hill Area, Spring Canyon Valley, and Wildrose Canyon. There is no renewable energy development.

Table III.6-7
California Department of Water Resources Basins in the Panamint Death Valley Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,5]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,5]		
			Sub-Basin Area	*Disturbed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin[3]*
6-76	Brown Mountain Valley[4]	21,700	21,700	0	0
6-81	Butte Valley[4]	8,800	7,600	0	0
6-18	Death Valley	919,800	790,600	600	0
6-46	Fremont Valley	335,000	200	0	0
6-74	Harrisburg Flats[4]	24,900	600	0	0
6-54	Indian Wells Valley	381,500	19,500	< 100	0
6-27	Leach Valley	60,900	200	0	0
6-71	Lost Lake Valley[4]	23,200	23,200	0	0
6-88	Owl Lake Valley[4]	22,200	21,700	0	0
6-58	Panamint Valley	259,100	240,000	100	0
6-51	Pilot Knob Valley	138,500	2,600	< 100	0
6-86	Rhodes Hill Area[4]	15,600	2,000	0	0
6-53	Salt Wells Valley	29,500	6,300	100	0
6-52	Searles Valley	196,900	178,500	25,400	0
6-82	Spring Canyon Valley[3]	4,800	4,800	0	0
6-75	Wildrose Canyon	5,100	< 100	0	0
6-19	Wingate Valley[4]	71,200	71,200	100	0

1 Groundwater basin areas were calculated using ArcGIS and the basin shapefile available from CDWR (http://www.water.ca.gov/groundwater/bulletin118/gwbasin_maps_descriptions.cfm). The calculated basin areas can be different than reported in the CDWR basin descriptions.

2 The basin area within each DRECP ecoregion subarea, herein referred to as the sub-basin, was determined by intersecting the CDWR groundwater basin shapefile with the DRECP ecoregion subarea boundary.

3 Reported acres of existing renewable energy projects having mapped locations within the sub-basin area. Note that the reported acres do not delineate between the renewable energy project footprint located within the CDWR basin boundary and portions of the footprint that might extend outside the basin boundary.

4 Groundwater storage capacity not reported for these basins in CDWR Bulletin 118.

5 The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

In the Panamint Death Valley ecoregion subarea, 10 basins are hydraulically connected (groundwater may flow between the connected basins), and 4 basins contain at least one

discharging playa: Death Valley, Brown Mountain Valley, Fremont Valley, and Searles Valley. The Amargosa River is located in the Death Valley basin, and the river has been designated a Wild and Scenic River. There are concerns that groundwater extraction may deprive the river of flow needed to sustain the resources protected by this designation.

The regional average annual precipitation recharge estimate for the Panamint Death Valley ecoregion subarea totals about 6,000 acre-feet/year (Figure III 6-7). This number is the total for areas within the Panamint Death Valley ecoregion subarea, including mountain blocks between basins. However, the estimate is a minimum value because it excludes rainfall in watershed areas located outside the Plan Area. The runoff from these outside watershed areas may generate substantial amounts of additional recharge as either percolating runoff or subsurface inflow. A discussion of the rainfall recharge estimates appears in Section III.6.3.3.2. Additionally, the recharge estimate excludes groundwater inflow from the regional carbonate aquifer from Middle Amargosa Valley in the Kingston and Funeral Mountains ecoregion subarea.

Groundwater storage capacity is reported for 8 of the 17 groundwater basins in this ecoregion subarea. The groundwater storage capacity of these 8 basins is approximately 15 million acre-feet (12 AF/Ac), which was calculated by pro-rating Bulletin 118 basin storage capacities on a per-area basis. Reported well yields range from 30 to 815 gpm; 12 of the 16 basins have no reported well-yield data. More than 150 wells with water-level data in the CDWR Water Data Library are in this ecoregion subarea, with most of the wells in the Searles Valley (74%) and Death Valley (19%) basins.

Average TDS concentrations in the Panamint Death Valley ecoregion subarea range from 360 to 21,500 mg/L. The predominant ions present in the groundwater include sodium, bicarbonate, calcium, sulfate, and chloride. There are also significant concentrations of boron, fluoride, nitrate, and arsenic in water from some of these basins. In the Indian Wells Valley, groundwater pumping has caused relatively poor quality shallow groundwater to leak down and negatively impact water quality in the deeper aquifer (CDWR Bulletin 118).

III.6.3.11 Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea

The Pinto Lucerne Valley and Eastern Slopes ecoregion subarea contains all or portions of 30 CDWR mapped groundwater basins, of which 1,268,000 acres are within this ecoregion subarea. Table III.6-8 lists the basin names, total basin areas, and sub-basin areas within this ecoregion subarea. Additionally, Table III.6-8 reports the sub-basins that are disturbed by either agriculture or other developed land uses, and the footprint of existing renewable energy projects, in acres, where mapped locations fall within the sub-basins (see Figure III.1-2[a] and Figure III.1-2[b] for a map of project locations and ecoregion subarea boundaries).

Table III.6-8
California Department of Water Resources Basins in the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,5]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,5]		
			Sub-Basin Area	*Disturbed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin*[3]
7-16	Ames Valley	108,400	108,400	7,500	0
7-15	Bessemer Valley	39,000	39,000	< 100	0
7-8	Bristol Valley	496,600	15,500	0	0
7-7	Cadiz Valley	269,800	100	0	0
7-5	Chuckwalla Valley	601,500	8,300	400	0
7-21.02	Coachella Valley-Mission Creek	48,500	800	0	0
7-11	Copper Mountain Valley[4]	30,300	30,300	4,400	1,500
7-9	Dale Valley	212,400	123,000	500	0
7-13.01	Deadman Valley-Deadman Lake	89,000	87,800	400	0
7-13.02	Deadman Valley-Surprise Spring	29,200	29,200	0	0
7-53	Hexie Mountain Area[3]	11,100	11,100	< 100	0
7-50	Iron Ridge Area[4]	5,200	5,200		0
7-18.01	Johnson Valley–Soggy Lake	77,200	77,000	1,000	0
7-18.02	Johnson Valley–Upper Johnson Valley[3]	34,800	34,800	0	0
7-62	Joshua Tree	27,200	27,200	2,400	0
6-89	Kane Wash Area	5,900	5,900	< 100	0
7-14	Lavic Valley	102,200	8,000	0	0
7-51	Lost Horse Valley[4]	17,300	16,900	< 100	0
6-40	Lower Mojave River Valley	285,300	15,300	< 100	0
7-19	Lucerne Valley	147,300	146,700	8,800	0
7-17	Means Valley	14,900	14,900	< 100	0
7-41	Middle Mojave River Valley	211,200	57,300	300	0
7-20	Morongo Valley	7,200	7,200	4,400	0
7-31	Orocopia Valley	96,200	800	< 100	0

Table III.6-8
California Department of Water Resources Basins in the Pinto Lucerne Valley and Eastern Slopes Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,5]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,5]		
			Sub-Basin Area	*Disturbed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin*[3]
7-6	Pinto Valley	182,400	170,100	< 100	0
7-49	Pipes Canyon Fault Valley[4]	3,400	2,800	300	0
7-52	Pleasant Valley[4]	9,600	9,600	0	0
7-10	Twentynine Palms Valley	62,200	62,200	7,200	200
6-42	Upper Mojave River Valley	412,500	129,200	31,000	< 100
7-12	Warren Valley	23,700	23,400	7,500	0

1 Groundwater basin areas were calculated using ArcGIS and the basin shapefile available from CDWR (http://www.water.ca.gov/groundwater/bulletin118/gwbasin_maps_descriptions.cfm). The calculated basin areas can be different than reported in the CDWR basin descriptions.

2 The basin area within each DRECP ecoregion subarea, herein referred to as the sub-basin, was determined by intersecting the CDWR groundwater basin shapefile with the DRECP ecoregion subarea boundary.

3 Reported acres of existing renewable energy projects having mapped locations within the sub-basin area. Note that the reported acres do not delineate between the renewable energy project footprint located within the CDWR basin boundary and portions of the footprint that might extend outside the basin boundary.

4 Groundwater storage capacity not reported for these basins in CDWR Bulletin 118.

5 The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Nineteen of the 30 basins listed in Table III.6-8 are almost entirely within the Pinto Lucerne Valley and Eastern Slopes ecoregion subarea. 90% or more of the area of each of these basins is within the ecoregion subarea. These 19 sub-basins represent 39% of the Pinto Lucerne Valley and Eastern Slopes ecoregion subarea. Of the remaining 11 sub-basins, 7 represent less than 10% of their basin: Bristol Valley, Cadiz Valley, Chuckwalla Valley, Coachella Valley-mission Creek, Lavic Valley, Lower Mojave River Valley, and Orocopia Valley. These 7 sub-basins together represent less than 3% of the ecoregion subarea.

In the Pinto Lucerne Valley and Eastern Slopes ecoregion subarea, 6% of the sub-basin areas are disturbed and only 4% of the disturbed area is for agriculture. Four of the 30 basins receive imported water: Lower Mojave River Valley, Middle Mojave River Valley, Upper Mojave River Valley, and Warren Valley basins. The Morongo Valley, Upper Mojave

River Valley, Warren Valley and Copper Valley sub-basins are the most disturbed, with from 15% to 61% of their area disturbed. There is about 1,700 acres of renewable energy project development, with most of it (88%) located in the Copper Mountain Valley basin.

Twenty basins in the Pinto Lucerne Valley and Eastern Slopes ecoregion subarea are hydraulically connected (groundwater may flow between the connected basins), and only four basins have discharging playas: Ames Valley, Bristol Valley, Cadiz Valley, and Dale Valley. Two basins partly or entirely overlie the Colorado River Aquifer, and an additional two basins are possibly tributary to the Colorado River Aquifer.

The regional average annual precipitation recharge estimate in the Pinto Lucerne Valley and Eastern Slopes ecoregion subarea ranges from 27,000 to 32,500 acre-feet/year (Figure III 6-7). This number is the total for areas within the ecoregion subarea, including mountain blocks between basins and parts of the adjacent San Bernardino-San Gorgonio mountains. Annual precipitation exceeds 20 inches per year near these mountain summits, and other basins within the Plan Area might not include similar recharge generating mountain areas. Therefore, recharge in basin areas adjacent to these mountains might be substantially greater than for the sub-basin areas. A discussion of the rainfall recharge estimates appears in Section III.6.3.3.2.

Groundwater storage capacity is reported for 23 of the 30 groundwater basins in the Pinto Lucerne Valley and Eastern Slopes ecoregion subarea. The groundwater storage capacity of these 23 basins is approximately 23 million acre-feet (about 20 AF/Ac), which was calculated by pro-rating Bulletin 118 basin storage capacities on a per-area basis. Reported well yields range from 60 to 3,000 gpm; 10 of the 30 basins have no reported well-yield data. More than 1,500 wells with water-level data in the CDWR Water Data Library are in this ecoregion subarea, and most of the wells are found in only two of the 30 basins. The monitoring wells with data are in the Upper Mojave River Valley (39%) and Lucerne Valley (27%) basins. Bulletin 118 reports show that Lucerne Valley wells have recorded significant water level declines since the 1950s, which have resulted in measured subsidence.

Average TDS concentrations in the Pinto Lucerne Valley and Eastern Slopes ecoregion subarea reportedly range from 160 mg/L to almost 53,500 mg/L. The predominant ions in the groundwater include sodium, bicarbonate, calcium, chloride, sulfate, and manganese. There are also significant concentrations of fluoride, boron, nitrate, and iron; the Orocopia Valley reports uranium and radon concentrations that are higher than allowed in drinking water standards (CDWR Bulletin 118).

The Lower Mojave River Valley and Upper Mojave River Valley contain 10 LUST sites and two Superfund sites contaminated with TCE, MTBE, BTEX, and other petroleum-based compounds.

The Middle Mojave River Valley Basin also contains high concentrations of volatile organic compounds and salts due to irrigation with effluent and leaching from a landfill.

III.6.3.12 Piute Valley and Sacramento Mountains Ecoregion Subarea

The Piute Valley and Sacramento Mountains ecoregion subarea contains all or portions of seven mapped groundwater basins, of which 589,000 acres are in this ecoregion subarea. Table III.6-9 lists the basin names, total basin areas, and sub-basins. Additionally, Table III.6-9 shows sub-basins that are disturbed by either agriculture or other developed land uses, and the footprint of existing renewable energy projects, in acres, where mapped locations fall within the sub-basins (see Figure III.1-2[a] and Figure III.1-2[b] for a map of project locations and ecoregion subarea boundaries).

Two of the seven basins listed in Table III.6-9 are almost entirely within the Piute Valley and Sacramento Mountains ecoregion subarea (90% or more of their total basin area is within this ecoregion subarea). These two sub-basins represent 33% of the Piute Valley and Sacramento Mountains ecoregion subarea. These are sub-basins of the Chemehuevi Valley and Needles Valley. Of the remaining 5 sub-basins, 3 represent less than 10% of their total basin areas: Calzona Valley, Rice Valley, and Vidal Valley basins. These 3 sub-basins together represent less than 2% of the ecoregion subarea.

Table III.6-9
California Department of Water Resources Basins in the Piute Valley and Sacramento Mountains Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,4]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,4]		
			Sub-Basin Area	*Disturbed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin*[3]
7-41	Calzona Valley	80,600	2,500	0	0
7-43	Chemehuevi Valley	272,100	272,000	1,300	0
7-44	Needles Valley	87,900	86,100	8,200	0
7-45	Piute Valley	175,100	110,700	1,400	0
7-4	Rice Valley	188,100	1,200	0	0
7-42	Vidal Valley	137,700	10,000	100	0
7-3	Ward Valley	557,600	106,500	0	0

1 Groundwater basin areas were calculated using ArcGIS and the basin shapefile available from CDWR (http://www.water.ca.gov/groundwater/bulletin118/gwbasin_maps_descriptions.cfm). The calculated basin areas can be different than reported in the CDWR basin descriptions.

2 The basin area within each DRECP ecoregion subarea, herein referred to as the sub-basin, was determined by intersecting the CDWR groundwater basin shapefile with the DRECP ecoregion subarea boundary.

[3] Reported acres of existing renewable energy projects having mapped locations within the sub-basin area. Note that the reported acres do not delineate between the renewable energy project footprint located within the CDWR basin boundary and portions of the footprint that might extend outside the basin boundary.

[4] The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

In the Piute Valley and Sacramento Mountains ecoregion subarea, less than 2% of the sub-basin area is disturbed; about 30% of the disturbed area is for agriculture. None of the basins receive imported water. The Needles Valley sub-basin is the most disturbed (10%), and 1% or less of the sub-basin areas in the Chemehuevi Valley, Piute Valley, and Vidal Valley are disturbed. There is no renewable energy development.

Within the Piute Valley and Sacramento Mountains ecoregion subarea, four of the seven basins partly or entirely overlie the Colorado River Aquifer, and one other basin is possibly tributary to the River Aquifer. Five basins within this ecoregion subarea are hydraulically connected (groundwater may flow between the connected basins), and none of the basins have a discharging playa.

The regional average annual precipitation recharge estimate in the Piute Valley and Sacramento Mountains ecoregion subarea is less than 4,000 acre-feet/year (Figure III 6-7). This number is the total for areas within the ecoregion subarea, including mountain blocks between basins. However, the estimate is a minimum value because it excludes rainfall in watershed areas located outside the Plan Area. The runoff from these outside watershed areas may generate substantial amounts of additional recharge as either percolating runoff or subsurface inflow. A discussion of the rainfall recharge estimates appears in Section III.6.3.3.2.

The groundwater storage capacity of the Piute Valley and Sacramento Mountains ecoregion subarea is approximately 9 million acre-feet (16 AF/Ac), which was calculated by pro-rating Bulletin 118 basin storage capacities on a per-area basis. Reported well yields range from 65 to 980 gpm; one of the seven basins has no reported well-yield data. More than 250 wells with water-level data in the CDWR Water Data Library are in this ecoregion subarea, and almost all of the wells are in the Needles Valley (70%) and Chemehuevi Valley (29%) basins.

Average TDS concentrations in the basins that comprise the Piute Valley and Sacramento Mountains ecoregion subarea range from 410 mg/L to almost 150,000 mg/L. Predominant ions in the groundwater include sodium, chloride, sulfate, and bicarbonate. There are also significant concentrations of fluoride and boron.

III.6.3.13 Providence and Bullion Mountains Ecoregion Subarea

The Providence and Bullion Mountains ecoregion subarea contains all or portions of 17 mapped CDWR groundwater basins, of which 1,646,000 acres are in this ecoregion subarea. Table III.6-10 lists the basin names, total basin areas, and sub-basins. Additionally, Table III.6-10 shows the sub-basins that are disturbed by either agriculture or other developed land uses, and the footprint of existing renewable energy projects, in acres, where mapped locations fall within the sub-basins (see Figure III.1-2[a] and Figure III.1-2[b] for a map of project locations and ecoregion subarea boundaries).

Table III.6-10
California Department of Water Resources Basins in the Providence and Bullion Mountains Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,5]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,5]		
			Sub-Basin Area	*Disturbed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin*[3]
7-8	Bristol Valley	496,600	481,000	4,100	0
6-32	Broadwell Valley	91,800	91,800	200	0
7-7	Cadiz Valley	269,800	29,700	< 100	0
6-90	Cady Fault Area[4]	7,900	7,400	0	0
6-38	Caves Canyon Valley	72,900	18,100	0	0
7-9	Dale Valley	212,400	89,500	400	0
7-13.01	Deadman Valley-Deadman Lake	89,000	1,200	0	0
7-2	Fenner Valley	452,400	452,400	200	0
6-30	Ivanpah Valley	197,900	2,200	0	0
6-31	Kelso Valley	254,600	10,300	< 100	0
7-1	Lanfair Valley	156,500	156,500	300	0
7-14	Lavic Valley	102,200	89,900	300	0
6-40	Lower Mojave River Valley	285,300	33,200	1,700	0
7-6	Pinto Valley	182,400	6,400	0	0
7-45	Piute Valley	175,100	64,400	0	0
6-33	Soda Lake Valley	379,800	13,700	0	0
7-3	Ward Valley	557,600	98,200	0	0

[1] Groundwater basin areas were calculated using ArcGIS and the basin shapefile available from CDWR (http://www.water.ca.gov/groundwater/bulletin118/gwbasin_maps_descriptions.cfm). The calculated basin areas can be different than reported in the CDWR basin descriptions.

[2] The basin area within each DRECP ecoregion subarea, herein referred to as the sub-basin, was determined by intersecting the CDWR groundwater basin shapefile with the DRECP ecoregion subarea boundary.

[3] Reported acres of existing renewable energy projects having mapped locations within the sub-basin area. Note that the reported acres do not delineate between the renewable energy project footprint located within the CDWR basin boundary and portions of the footprint that might extend outside the basin boundary.

[4] Groundwater storage capacity not reported for this basin in CDWR Bulletin 118.

[5] The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Five of the 17 basins listed in Table III.6-10 are almost entirely within the Providence and Bullion Mountains ecoregion subarea (90% or more of their total basin area is located in the ecoregion subarea). These 5 sub-basins represent 45% of the Providence and Bullion Mountains ecoregion subarea. These are sub-basins of the Bristol Valley, Broadwell Valley, Cady Fault Area, Fenner Valley, and Lanfair Valley. Of the remaining 12 sub-basins, 5 represent less than 10% of their basins: Deadman Valley–Deadman Lake, Ivanpah Valley, Kelso Valley, Pinto Valley, and Soda Lake Valley basins. These 5 sub-basins together represent less than 2% of the ecoregion subarea.

In the Providence and Bullion Mountains ecoregion subarea, less than 0.5% of the sub-basin areas are is disturbed, and only 21% of the disturbed area is for agriculture; only one of the sub-basins (Lower Mojave River Valley) receives imported water. The Lower Mojave River Valley sub-basin is the most disturbed (5%), and 1% or less of the other sub-basins is disturbed. There is no existing renewable energy development.

Eleven basins within the Providence and Bullion Mountains ecoregion subarea are hydraulically connected (groundwater may flow between the connected basins), and four basins have discharging playas: Bristol Valley, Cadiz Valley, Dale Valley, and Soda Lake Valley. The southern end of the Cadiz Valley basin overlies the Colorado River Aquifer, and the Pinto Valley basin is also tributary to the Colorado River Aquifer.

The regional average annual precipitation recharge estimate in the Providence and Bullion Mountains ecoregion subarea totals less than 11,000 acre-feet/year (Figure III 6-7). This number is the total for areas within the Providence and Bullion Mountains ecoregion subarea, including mountain blocks between basins. However, the estimated rainfall recharge is a minimum value because it excludes rainfall in watershed areas located outside the Plan Area. The runoff from these outside watershed areas may generate substantial amounts of additional recharge as either percolating runoff or subsurface inflow. A discussion of the rainfall recharge estimates appears in Section III.6.3.3.2.

Groundwater storage capacity is reported for 16 of the 17 groundwater basins in the Providence and Bullion Mountains Subarea. The groundwater storage capacity of these 16

basins is approximately 24 million acre-feet (14 AF/Ac), which was calculated by pro-rating Bulletin 118 basin storage capacities on a per-area basis. Reported well yields range from 16 to 1,000 gpm; three of the 17 basins have no reported well-yield data. More than 100 wells with water-level data in the CDWR Water Data Library are located in this ecoregion subarea. Most of these wells are found in Lower Mojave River Valley (48%), Fenner Valley (25%), and Lanfair Valley (16%).

Average TDS concentrations in the Providence and Bullion Mountains ecoregion subarea basins range from 350 mg/L to almost 150,000 mg/L. Predominant ions in the groundwater include sodium, bicarbonate, chloride, calcium, and sulfate. In areas near playas, the groundwater is typically high in sodium and chloride. There are also significant concentrations of fluoride and boron, and the Lower Mojave River Valley Basin contains nine LUST sites and one Superfund site contaminated with TCE, MTBE, BTEX, and other petroleum-based compounds. The groundwater in the Ivanpah Valley Basin contains radioactive constituents due to naturally occurring rare earth ore bodies and associated industrial processes related to active and historic mining of these ore bodies.

III.6.3.14 West Mojave and Eastern Slopes Ecoregion Subarea

The West Mojave and Eastern Slopes ecoregion subarea contains all or portions of 20 mapped CDWR groundwater basins, of which 2,754,000 acres are in this ecoregion subarea. Table III.6-11 lists the basin names, total basin areas, and sub-basins. Additionally, Table III.6-11 shows the sub-basins that are disturbed by either agricultural or other developed land uses, and the footprint of existing renewable energy projects, in acres, where mapped locations fall within the sub-basins (see Figure III.1-2[a] and Figure III.1-2[b] for a map of project locations and ecoregion subarea boundaries).

Nine of the 20 basins listed in Table III.6-11 are almost entirely within the West Mojave and Eastern Slopes ecoregion subarea (90% or more of their total basin areas is located in the ecoregion subarea). These nine sub-basins represent 60% of the West Mojave and Eastern Slopes ecoregion subarea. These are sub-basins of the Antelope Valley, Coso Valley, El Mirage Valley, Fremont Valley, Harper Valley, Indian Wells, Kelso Lander Valley, Tehachapi Valley East, and Tehachapi Valley West basins. Of the remaining 11 sub-basins, five represent less than 10% of their basins: Cummings Valley, Kern River Valley, Rose Valley, Searles Valley, and Upper Santa Ana Valley–Cajon. These five sub-basins together represent less than 0.3% of the ecoregion subarea.

In the West Mojave and Eastern Slopes ecoregion subarea, almost 12% of the sub-basin areas are disturbed and only 18% of the disturbed area is for agriculture. Four of the basins receive imported water: Antelope Valley, Lower Mojave River Valley, Middle Mojave River Valley, and Upper Mojave River Valley. The Antelope Valley, Brite Valley, Lower Mojave

River Valley, Tehachapi Valley East, Tehachapi Valley West, and Upper Mojave River Valley sub-basins are the most disturbed, with 17% to 76% of their areas disturbed. Almost 1% of this ecoregion subarea has renewable energy project development, with the greatest acreages in the Antelope Valley (15,000 acres), Fremont Valley (4,000 acres), and Harper Valley (2,000 acres).

Nine basins in the West Mojave and Eastern Slopes ecoregion subarea are hydraulically connected (groundwater may flow between the connected basins), and 2 basins (Fremont Valley and Searles Valley) have discharging playas.

Table III.6-11
California Department of Water Resources Basins in the West Mojave and Eastern Slopes Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,5]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,5]		
			Sub-Basin Area	*Disturbed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin*[3]
6-44	Antelope Valley	1,009,700	953,000	161,800	15,400
5-80	Brite Valley	3,200	2,000	900	0
6-55	Coso Valley	25,500	23,900	0	0
6-50	Cuddeback Valley	94,800	76,000	100	0
5-27	Cummings Valley	10,000	< 100	< 100	0
6-43	El Mirage Valley	75,800	73,100	5,700	< 100
6-46	Fremont Valley	335,000	317,200	16,400	4,000
6-47	Harper Valley	409,200	401,400	7,900	1,800
6-54	Indian Wells Valley	381,500	361,100	21,600	100
6-69	Kelso Lander Valley[4]	11,200	11,200	< 100	0
5-25	Kern River Valley[4]	79,400	3,900	100	0
6-40	Lower Mojave River Valley	285,300	36,700	11,200	0
6-41	Middle Mojave River Valley	211,200	153,900	5,800	0
6-56	Rose Valley	42,500	300	< 100	0
6-53	Salt Wells Valley	29,500	23,200	300	0
6-52	Searles Valley	196,900	3,200	0	0
6-45	Tehachapi Valley East	24,000	24,000	5,200	0
5-28	Tehachapi Valley West	14,800	14,800	11,200	0

Table III.6-11
California Department of Water Resources Basins in the West Mojave and Eastern Slopes Ecoregion Subarea of the DRECP

Basin Number	Groundwater Basin	Total Basin Area (acres)[1,5]	Portion of Basin (Sub-Basin) in Ecoregion Subarea[2,5]		
			Sub-Basin Area	*Disturbed Sub-Basin Area*	*Existing Renewable Energy Projects Located in Sub-Basin*[3]
6-42	Upper Mojave River Valley	412,500	274,600	77,400	< 100
8-2.05	Upper Santa Ana Valley–Cajon[4]	23,200	200	< 100	0

1 Groundwater basin areas were calculated using ArcGIS and the basin shapefile available from CDWR (http://www.water.ca.gov/groundwater/bulletin118/gwbasin_maps_descriptions.cfm). The calculated basin areas can be different than reported in the CDWR basin descriptions.

2 The basin area within each DRECP ecoregion subarea, herein referred to as the sub-basin, was determined by intersecting the CDWR groundwater basin shapefile with the DRECP ecoregion subarea boundary.

3 Reported acres of existing renewable energy projects having mapped locations within the sub-basin area. Note that the reported acres do not delineate between the renewable energy project footprint located within the CDWR basin boundary and portions of the footprint that might extend outside the basin boundary.

4 Groundwater storage capacity not reported for these basins in CDWR Bulletin 118.

5 The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

The regional average annual precipitation recharge estimate for the West Mojave and Eastern Slopes ecoregion subarea totals about 52,000 to 58,000 acre-feet/year (Figure III 6-7). This number is the total for areas that fall within the ecoregion subarea, including mountain blocks between basins, and includes parts of the adjacent San Bernardino-San Gorgonio mountains. Annual precipitation exceeds 20 inches per year near these mountain summits, and other basin and ecoregion subarea areas within the Plan Area might not include similar recharge generating mountain areas. Therefore, recharge in basin areas adjacent to these mountains might be substantially greater than for the sub-basin areas within the ecoregion subarea boundaries. For example, a comprehensive study of groundwater conditions in the Mojave River basin estimated average annual total recharge during 1931–1990 to equal 150,300 AF/year, of which two-thirds derived from mountain front recharge and runoff originating in upper watershed areas (Stamos et al. 2001). A discussion of the rainfall recharge estimates appears in Section III.6.3.3.2.

Groundwater storage capacity is reported for 16 of the 20 groundwater basins in the West Mojave and Eastern Slopes ecoregion subarea. The groundwater storage capacity of these 16 basins is approximately 100 million acre-feet (36 AF/Ac), which was calculated by pro-

rating Bulletin 118 basin storage capacities on a per-area basis. Reported well yields range from 60 to 3,650 gpm; three of the 19 basins have no reported well-yield data. More than 5,500 wells with water-level data in CDWR Water Data Library are in this ecoregion subarea. Most are located in Antelope Valley (41%), Upper Mojave River Valley (17%), Indian Wells Valley (10%), and Lower Mojave River Valley (10%) basins. Significant subsidence has been measured in areas near Lancaster and Edwards Air Force Base, where by 1992 almost 190,000 acres had subsided more than 1 foot.

Average TDS concentrations in the West Mojave and Eastern Slopes ecoregion subarea basins range from 130 to 21,500 mg/L. Predominant ions in the groundwater include sodium, calcium, bicarbonate, chloride, and sulfate. There are also significant concentrations of boron, fluoride, nitrate, arsenic, iron, and magnesium. Middle Mojave River Valley Basin groundwater can contain high concentrations of volatile organic compounds and salts due to irrigation with effluent and leaching from a landfill. The Lower Mojave River Valley and Upper Mojave River Valley basins contain 10 LUST sites and two Superfund sites contaminated with TCE, MTBE, BTEX, and other petroleum-based compounds. In the Indian Wells Valley, groundwater pumping has caused relatively poor quality shallow groundwater to leak down and negatively impact water quality in the deeper aquifer. The Middle Mojave River Valley Basin groundwater also contains chromium, both naturally occurring and associated with industrial processes.

III.6.4 Bureau of Land Management Land Use Plan Amendment

The Bureau of Land Management (BLM) Land Use Plan Amendment (LUPA) Affected Environment for groundwater resources includes BLM-administered lands within the LUPA area. The LUPA area overlaps parts of 91 CDWR-delineated groundwater basins representing more than 6.7 million acres, which is 43% of the total area of groundwater basins in the Plan Area. The basin acreages within the LUPA Plan Area are summarized in Table III.6-12.

Table III.6-12
California Department of Water Resources
Basins within BLM LUPA Affected Environment

Basin Name	Total Basin Area (acres)	Area in BLM LUPA Plan Area (acres)	Percent of Basin Acreage Affected
Ames Valley	108,400	28,300	26%
Amos Valley	129,900	82,400	63%
Antelope Valley	1,009,700	11,300	1%

Table III.6-12
California Department of Water Resources
Basins within BLM LUPA Affected Environment

Basin Name	Total Basin Area (acres)	Area in BLM LUPA Plan Area (acres)	Percent of Basin Acreage Affected
Arroyo Seco Valley	256,500	106,500	42%
Bessemer Valley	39,000	28,100	72%
Borrego Valley	152,500	34,300	22%
Bristol Valley	496,600	317,900	64%
Broadwell Valley	91,800	85,500	93%
Cadiz Valley	269,800	233,300	86%
Cady Fault Area	7,900	5,600	71%
California Valley	58,100	55,500	96%
Calzona Valley	80,600	43,100	53%
Caves Canyon Valley	72,900	43,000	59%
Chemehuevi Valley	272,100	228,400	84%
Chocolate Valley	129,100	28,900	22%
Chuckwalla Valley	601,500	488,800	81%
Coachella Valley–Mission Creek	48,500	200	<1%
Copper Mountain Valley	30,300	1,900	6%
Coyote Lake Valley	88,000	45,300	51%
Coyote Wells Valley	145,600	97,500	67%
Cronise Valley	126,200	46,700	37%
Cuddeback Valley	94,800	65,800	69%
Dale Valley	212,400	132,500	62%
Deadman Valley–Surprise Spring	29,200	600	2%
Death Valley	919,800	46,400	5%
Denning Spring Valley	7,200	2,800	39%
East Salton Sea	194,800	30,700	16%
El Mirage Valley	75,800	5,000	7%
Fenner Valley	452,400	194,600	43%
Fremont Valley	335,000	93,200	28%
Grass Valley	10,000	6,700	67%
Greenwater Valley	59,800	100	<1%
Harper Valley	409,200	199,300	49%
Imperial Valley	957,600	319,800	33%
Indian Wells Valley	381,500	150,700	40%
Iron Ridge Area	5,200	5,000	96%

Table III.6-12
California Department of Water Resources
Basins within BLM LUPA Affected Environment

Basin Name	Total Basin Area (acres)	Area in BLM LUPA Plan Area (acres)	Percent of Basin Acreage Affected
Ivanpah Valley	197,900	74,000	37%
Johnson Valley–Soggy Lake	77,200	47,800	62%
Johnson Valley–Upper Johnson Valley	34,800	32,500	93%
Joshua Tree	27,200	700	3%
Kane Wash Area	5,900	4,000	68%
Kelso Lander Valley	11,200	2,600	23%
Kelso Valley	254,600	38,800	15%
Kern River Valley	79,400	2,400	3%
Lanfair Valley	156,500	13,300	8%
Langford Valley–Langford Well Lake	19,300	1,300	7%
Lavic Valley	102,200	36,600	36%
Leach Valley	60,900	8,500	14%
Lower Kingston Valley	239,600	228,000	95%
Lower Mojave River Valley	285,300	118,900	42%
Lucerne Valley	147,300	68,500	47%
Means Valley	14,900	13,800	93%
Mesquite Valley	88,100	72,200	82%
Middle Amargosa Valley	389,500	285,000	73%
Middle Mojave River Valley	211,200	91,900	44%
Morongo Valley	7,200	600	8%
Needles Valley	87,900	45,000	51%
Ocotillo–Clark Valley	222,100	69,500	31%
Ogilby Valley	133,200	119,200	89%
Orocopia Valley	96,200	9,000	9%
Owens Valley	660,700	133,200	20%
Owl Lake Valley	22,200	200	<1%
Pahrump Valley	92,800	73,800	80%
Palo Verde Mesa	225,000	136,400	61%
Palo Verde Valley	73,000	500	<1%
Panamint Valley	259,100	143,400	55%
Pilot Knob Valley	138,500	1,000	<1%
Pinto Valley	182,400	3,800	2%
Pipes Canyon Fault Valley	3,400	1,900	56%

Table III.6-12
California Department of Water Resources
Basins within BLM LUPA Affected Environment

Basin Name	Total Basin Area (acres)	Area in BLM LUPA Plan Area (acres)	Percent of Basin Acreage Affected
Piute Valley	175,100	109,800	63%
Quien Sabe Point Valley	25,100	12,900	51%
Red Pass Valley	96,200	6,100	6%
Rice Valley	188,100	164,200	87%
Riggs Valley	87,500	59,600	68%
Rose Valley	42,500	26,800	63%
Salt Wells Valley	29,500	11,000	37%
Searles Valley	196,900	147,400	75%
Silver Lake Valley	35,200	32,600	93%
Soda Lake Valley	379,800	136,400	36%
Superior Valley	120,200	23,500	20%
Tehachapi Valley East	24,000	4,100	17%
Twentynine Palms Valley	62,200	8,800	14%
Upper Kingston Valley	176,700	87,700	50%
Upper Mojave River Valley	412,500	37,700	9%
Upper Santa Ana Valley–Cajon	23,200	100	<1%
Vallecito-Carrizo Valley	121,700	4,800	4%
Vidal Valley	137,700	123,600	90%
Ward Valley	557,600	523,100	94%
Warren Valley	23,700	200	<1%
West Salton Sea	105,300	13,100	12%
Yuma Valley	124,000	57,500	46%

Note: The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

III.6.5 Natural Community Conservation Planning Existing Conditions

The Natural Community Conservation Planning (NCCP) Affected Environment for groundwater resources is the Plan Area excluding the Department of Defense, Military Expansion Mitigation, and tribal lands. The area overlaps all or part of 106 CDWR-delineated groundwater basins. Almost 13.7 million acres of groundwater basins are overlain by the NCCP,

representing 87% of the total area of groundwater basins in the Plan Area. The basin acreages within the NCCP Plan Area are summarized in Table III.6-13.

Table III.6-13
California Department of Water Resources Basins within NCCP Affected Environment

Basin Name	Total Basin Area (acres)	Area in NCCP Plan Area (acres)	Percent Basin Acreage in NCCP Plan Area
Ames Valley	108,400	72,200	67%
Amos Valley	129,900	91,900	71%
Antelope Valley	1,009,700	757,400	75%
Arroyo Seco Valley	256,500	160,100	62%
Bessemer Valley	39,000	31,200	80%
Bicycle Valley	89,400	100	<1%
Borrego Valley	152,500	139,700	92%
Bristol Valley	496,600	379,600	76%
Brite Valley	3,200	2,000	63%
Broadwell Valley	91,800	91,300	99%
Butte Valley	8,800	7,600	86%
Cadiz Valley	269,800	269,800	100%
Cady Fault Area	7,900	7,900	100%
California Valley	58,100	58,100	100%
Calzona Valley	80,600	53,800	67%
Caves Canyon Valley	72,900	67,100	92%
Chemehuevi Valley	272,100	251,000	92%
Chocolate Valley	129,100	31,300	24%
Chuckwalla Valley	601,500	601,500	100%
Coachella Valley–Indio	297,000	500	<1%
Coachella Valley–Mission Creek	48,500	800	2%
Copper Mountain Valley	30,300	30,300	100%
Coyote Lake Valley	88,000	62,200	71%
Coyote Wells Valley	145,600	124,600	86%
Cronise Valley	126,200	52,900	42%
Cuddeback Valley	94,800	92,100	97%
Dale Valley	212,400	180,300	85%
Deadman Valley–Surprise Spring	29,200	2,600	9%
Death Valley	919,800	867,200	94%
Denning Spring Valley	7,200	2,800	39%
East Salton Sea	194,800	89,100	46%

Table III.6-13
California Department of Water Resources Basins within NCCP Affected Environment

Basin Name	Total Basin Area (acres)	Area in NCCP Plan Area (acres)	Percent Basin Acreage in NCCP Plan Area
El Mirage Valley	75,800	73,100	96%
Fenner Valley	452,400	452,400	100%
Fremont Valley	335,000	324,300	97%
Gold Valley	3,200	3,200	100%
Goldstone Valley	28,100	200	<1%
Grass Valley	10,000	6,700	67%
Greenwater Valley	59,800	59,800	100%
Harper Valley	409,200	390,800	96%
Harrisburg Flats	24,900	600	2%
Hexie Mountain Area	11,100	11,100	100%
Imperial Valley	957,600	923,200	96%
Indian Wells Valley	381,500	218,800	57%
Iron Ridge Area	5,200	5,200	100%
Ivanpah Valley	197,900	197,900	100%
Johnson Valley–Soggy Lake	77,200	77,000	100%
Johnson Valley–Upper Johnson Valley	34,800	34,800	100%
Joshua Tree	27,200	27,000	99%
Kane Wash Area	5,900	5,700	97%
Kelso Lander Valley	11,200	11,100	99%
Kelso Valley	254,600	254,600	100%
Kern River Valley	79,400	3,900	5%
Lanfair Valley	156,500	156,500	100%
Langford Valley–Langford Well Lake	19,300	1,300	7%
Lavic Valley	102,200	45,300	44%
Leach Valley	60,900	10,800	18%
Lost Horse Valley	17,300	16,900	98%
Lost Lake Valley	23,200	23,200	100%
Lower Kingston Valley	239,600	239,600	100%
Lower Mojave River Valley	285,300	258,100	90%
Lucerne Valley	147,300	146,700	100%
Means Valley	14,900	14,900	100%
Mesquite Valley	88,100	88,000	100%
Middle Amargosa Valley	389,500	389,400	100%
Middle Mojave River Valley	211,200	191,400	91%

Table III.6-13
California Department of Water Resources Basins within NCCP Affected Environment

Basin Name	Total Basin Area (acres)	Area in NCCP Plan Area (acres)	Percent Basin Acreage in NCCP Plan Area
Morongo Valley	7,200	7,200	100%
Needles Valley	87,900	80,100	91%
Ocotillo–Clark Valley	222,100	207,800	94%
Ogilby Valley	133,200	133,000	100%
Orocopia Valley	96,200	17,400	18%
Owens Valley	660,700	346,600	52%
Owl Lake Valley	22,200	22,200	100%
Pahrump Valley	92,800	92,800	100%
Palo Verde Mesa	225,000	225,000	100%
Palo Verde Valley	73,000	72,800	100%
Panamint Valley	259,100	238,900	92%
Pilot Knob Valley	138,500	1,100	<1%
Pinto Valley	182,400	178,500	98%
Pipes Canyon Fault Valley	3,400	2,800	82%
Piute Valley	175,100	175,100	100%
Pleasant Valley	9,600	9,600	100%
Quien Sabe Point Valley	25,100	25,100	100%
Red Pass Valley	96,200	6,900	7%
Rhodes Hill Area	15,600	15,600	100%
Rice Valley	188,100	185,000	98%
Riggs Valley	87,500	64,000	73%
Rose Valley	42,500	30,400	72%
Salt Wells Valley	29,500	11,600	39%
Searles Valley	196,900	164,200	83%
Silver Lake Valley	35,200	35,100	100%
Soda Lake Valley	379,800	379,800	100%
Spring Canyon Valley	4,800	4,800	100%
Superior Valley	120,200	31,100	26%
Tehachapi Valley East	24,000	24,000	100%
Tehachapi Valley West	14,800	14,800	100%
Twentynine Palms Valley	62,200	49,400	79%
Upper Kingston Valley	176,700	176,700	100%
Upper Mojave River Valley	412,500	403,700	98%
Upper Santa Ana Valley–Cajon	23,200	200	<1%

Table III.6-13
California Department of Water Resources Basins within NCCP Affected Environment

Basin Name	Total Basin Area (acres)	Area in NCCP Plan Area (acres)	Percent Basin Acreage in NCCP Plan Area
Vallecito-Carrizo Valley	121,700	96,900	80%
Vidal Valley	137,700	137,700	100%
Ward Valley	557,600	557,600	100%
Warren Valley	23,700	23,400	99%
West Salton Sea	105,300	83,900	80%
Wingate Valley	71,200	39,600	56%
Yuma Valley	124,000	75,100	61%

Note: The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

III.6.6 General Conservation Land Plan Affected Environment

The General Conservation Plan (GCP) Affected Environment includes all nonfederal lands within the Plan Area. The GCP for groundwater resources overlaps parts of 94 CDWR-delineated groundwater basins, representing almost 4.6 million acres (29% of the total area of groundwater basins in the Plan Area). The basin acreages within the GCP area are summarized in Table III.6-14.

Table III.6-14
California Department of Water Resources Basins within GCP Affected Environment

Basin Name	Total Basin Area (acres)	Area in GCP Area (acres)	Percent Basin Acreage in GCP Area
Ames Valley	108,400	43,900	40%
Amos Valley	129,900	9,500	7%
Antelope Valley	1,009,700	746,000	74%
Arroyo Seco Valley	256,500	50,100	20%
Bessemer Valley	39,000	3,100	8%
Bicycle Valley	89,400	100	<1%
Borrego Valley	152,500	105,400	69%
Bristol Valley	496,600	54,700	11%
Brite Valley	3,200	2,000	63%

Table III.6-14
California Department of Water Resources Basins within GCP Affected Environment

Basin Name	Total Basin Area (acres)	Area in GCP Area (acres)	Percent Basin Acreage in GCP Area
Broadwell Valley	91,800	5,800	6%
Cadiz Valley	269,800	25,700	10%
Cady Fault Area	7,900	2,300	29%
California Valley	58,100	2,600	4%
Calzona Valley	80,600	37,300	46%
Caves Canyon Valley	72,900	24,100	33%
Chemehuevi Valley	272,100	39,800	15%
Chocolate Valley	129,100	2,400	2%
Chuckwalla Valley	601,500	85,900	14%
Coachella Valley–Indio	297,000	1,000	<1%
Coachella Valley–Mission Creek	48,500	500	1%
Copper Mountain Valley	30,300	28,300	93%
Coyote Lake Valley	88,000	16,900	19%
Coyote Wells Valley	145,600	27,100	19%
Cronise Valley	126,200	6,200	5%
Cuddeback Valley	94,800	26,300	28%
Dale Valley	212,400	41,300	19%
Deadman Valley–Surprise Spring	29,200	1,900	7%
Death Valley	919,800	11,000	1%
East Salton Sea	194,800	57,500	30%
El Mirage Valley	75,800	68,100	90%
Fenner Valley	452,400	30,500	7%
Fremont Valley	335,000	231,100	69%
Goldstone Valley	28,100	200	1%
Greenwater Valley	59,800	600	1%
Harper Valley	409,200	191,500	47%
Imperial Valley	957,600	577,800	60%
Indian Wells Valley	381,500	68,100	18%
Ivanpah Valley	197,900	14,400	7%
Johnson Valley–Soggy Lake	77,200	29,200	38%
Johnson Valley–Upper Johnson Valley	34,800	2,300	7%
Joshua Tree	27,200	17,000	63%
Kane Wash Area	5,900	1,600	27%
Kelso Lander Valley	11,200	8,600	77%

Table III.6-14
California Department of Water Resources Basins within GCP Affected Environment

Basin Name	Total Basin Area (acres)	Area in GCP Area (acres)	Percent Basin Acreage in GCP Area
Kelso Valley	254,600	5,000	2%
Kern River Valley	79,400	1,500	2%
Lanfair Valley	156,500	38,800	25%
Lavic Valley	102,200	8,800	9%
Lost Lake Valley	23,200	1,500	6%
Lower Kingston Valley	239,600	11,600	5%
Lower Mojave River Valley	285,300	139,200	49%
Lucerne Valley	147,300	78,20000	53%
Means Valley	14,900	1,100	7%
Mesquite Valley	88,100	15,800	18%
Middle Amargosa Valley	389,500	23,000	6%
Middle Mojave River Valley	211,200	99,500	47%
Morongo Valley	7,200	6,700	93%
Needles Valley	87,900	27,300	31%
Ocotillo–Clark Valley	222,100	138,300	62%
Ogilby Valley	133,200	13,900	10%
Orocopia Valley	96,200	7,200	7%
Owens Valley	660,700	213,100	32%
Owl Lake Valley	22,200	600	3%
Pahrump Valley	92,800	19,000	20%
Palo Verde Mesa	225,000	86,200	38%
Palo Verde Valley	73,000	60,800	83%
Panamint Valley	259,100	8,800	3%
Pilot Knob Valley	138,500	100	<1%
Pinto Valley	182,400	1,700	1%
Pipes Canyon Fault Valley	3,400	900	26%
Piute Valley	175,100	21,100	12%
Quien Sabe Point Valley	25,100	6,100	24%
Red Pass Valley	96,200	800	1%
Rhodes Hill Area	15,600	400	3%
Rice Valley	188,100	21,900	12%
Riggs Valley	87,500	4,400	5%
Rose Valley	42,500	3,600	8%
Salt Wells Valley	29,500	700	2%

Table III.6-14
California Department of Water Resources Basins within GCP Affected Environment

Basin Name	Total Basin Area (acres)	Area in GCP Area (acres)	Percent Basin Acreage in GCP Area
Searles Valley	196,900	16,800	9%
Silver Lake Valley	35,200	2,500	7%
Soda Lake Valley	379,800	25,100	7%
Superior Valley	120,200	7,500	6%
Tehachapi Valley East	24,000	19,900	83%
Tehachapi Valley West	14,800	14,800	100%
Twentynine Palms Valley	62,200	40,500	65%
Upper Kingston Valley	176,700	9,000	5%
Upper Mojave River Valley	412,500	366,100	89%
Upper Santa Ana Valley–Cajon	23,200	200	<1%
Vallecito-Carrizo Valley	121,700	92,100	76%
Vidal Valley	137,700	14,100	10%
Ward Valley	557,600	34,500	6%
Warren Valley	23,700	19,900	84%
West Salton Sea	105,300	73,800	70%
Wingate Valley	71,200	200	<1%
Yuma Valley	124,000	54,500	44%

Note: The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

III.6.7 Groundwater, Water Supply, and Water Quality Outside of Plan Area

III.6.7.1 Transmission Out of Plan Area

The transmission required outside the DRECP would generally fall into four geographic areas: San Diego, Los Angeles, Central Valley, and the Rialto/Moreno Valley/Devers areas. An overview of the existing groundwater, water supply, and water quality in the basins underlying transmission corridors in each of these areas is provided below; information is generally summarized from California CDWR Bulletin 118 (California Department of Water Resources 2003). The regulatory setting related to groundwater, water supply, and water quality outside the Plan Area includes the laws, ordinances, and regulations described in Section III.6.1 Regulatory Setting.

III.6.7.1.1 San Diego Area

The transmission corridor in the San Diego Area would traverse seven groundwater basins: Coyote Wells Valley, Campo Valley, Cottonwood Valley, Jacumba Valley, Poway Valley, Potrero Valley, and San Diego River Valley. Of these, Coyote Wells Valley Basin extends into the Plan Area and is described in Section III.6.4.2 Groundwater Resources within the Plan Area.

These groundwater basins are small, ranging from 3.2 to 15.4 square miles. They are typically bounded by the impermeable crystalline rocks of the Peninsular Ranges. The primary water-bearing deposits of these basins are Quaternary alluvium and residuum.

Storage capacity is unknown for most of the basins in the San Diego area; however, the estimated capacity for the San Diego River Valley Basin is 97,000 acre-feet and 63,450 acre-feet for the Campo Valley Basin. Recharge is from direct precipitation. Septic tank effluent and irrigation waters also provide some recharge.

The alluvium typical of most basins in the San Diego Area contains water of calcium bicarbonate character trending toward sodium chloride in the westernmost basin (Poway Valley). Impairment is unknown for several basins. High chloride and high TDS levels make water from some wells in the Poway Basin inferior for agricultural or domestic use. Similarly, the northern portions of the Jacumba Valley Basin are characterized by high TDS.

III.6.7.1.1.1 Alternatives

The affected environment for the alternatives in the San Diego Area is the same as the Preferred Alternative, described above.

III.6.7.1.2 Los Angeles Area

The transmission corridor in the Los Angeles Area would traverse six groundwater basins: Coastal Plain of Los Angeles, San Gabriel Valley, Upper Santa Ana Valley, Raymond, Upper Mojave River Valley, Antelope Valley. Of these, Upper Mojave River Valley and Antelope Valley extend into the Plan Area and are described in Section III.6.4.10 West Mojave and Eastern Slopes ecoregion subarea.

The affected groundwater basins in the Los Angeles Area underlie portions of the San Gabriel Valley as well as the upper Santa Ana River Watershed in San Bernardino County and portions of western Riverside and Los Angeles counties. The water-bearing materials of the groundwater basins in the Los Angeles Area are dominated by unconsolidated to semi-consolidated alluvium deposited by streams flowing out of neighboring mountains. These deposits include Pleistocene and Holocene alluvium and the lower Pleistocene San

Pedro Formation. Upper Pleistocene alluvium deposits form most of the productive water-bearing deposits in these basins. Several faults, including the Raymond Fault, Rialto-Colton Fault, Chino Fault, San Jose Fault, and Cucamonga Fault, as well as impermeable and consolidated rocks, act as barriers to groundwater movement in portions of the groundwater basins in the Los Angeles Area.

Total storage capacity of the groundwater basins in the Los Angeles Area ranges from 18,300,000 acre-feet in the Chino Sub-basin of the Coastal Plain of Los Angeles Groundwater Basin to approximately 1,450,000 acre-feet in the of Raymond Groundwater Basin. Natural recharge is primarily from direct percolation of precipitation and percolation of ephemeral stream flow from neighboring mountains and applied water in spreading grounds.

Maximum contaminant levels (MCLs) are exceeded in several public supply wells for various contaminants, including TDS, nitrate, volatile organic compounds (VOCs), perchlorate, N-nitrosodimethylamine (NDMA), inorganics, radiology, semi-VOCs, pesticides, and perchlorate (DWR 2006).

III.6.7.1.2.1 Alternatives 1, 3, and 4

Alternatives 1, 3, and 4 are the same as the Preferred Alternative in the Los Angeles Area, with an additional new 500 kV transmission line corridor from the Vincent Substation to an upgraded Los Angeles Department of Water and Power (LADWP) Station E Substation. The affected environment for these alternatives is the same as for the Preferred Alternative, with the addition of the San Fernando Valley Groundwater Basin.

The San Fernando Valley Groundwater Basin is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the south by the Santa Monica Mountains and Chalk Hills, and on the west by the Simi Hills. It is drained by the Los Angeles River and its tributaries. Water-bearing sediments consist of the lower Pleistocene Saugus Formation, and Pleistocene and Holocene alluvium. Several faults, rock types, and subsurface dams create complete or partial barriers to groundwater movement within the basin.

The total storage capacity of the San Fernando Valley Groundwater Basin is approximately 3,670,000 acre-feet. Recharge of the basin is from a variety of sources including spreading imported water and infiltration from natural streamflow from the surrounding mountains and precipitation.

Water is predominately of calcium sulfate-bicarbonate or calcium bicarbonate character. Primary contaminants include VOCs and elevated sulfate concentrations.

III.6.7.1.2.2 Alternative 2

In the Los Angeles Area, Alternative 2 is the same as for the Preferred Alternative, with an additional new 500 kV transmission line corridor from the Vincent Substation to the Moorpark Substation. The affected environment for these alternatives is the same as for the Preferred Alternative, with the addition of the Las Posas Valley and Acton Valley groundwater basins.

The Acton Valley Groundwater Basin is bounded by the Sierra Pelona Mountains on the north and the San Gabriel Mountains on the south, east, and west; this basin is drained by the Santa Clara River. The Las Posas Groundwater Basin underlies the Las Posas Valley in southern Ventura County. In this basin, Arroyo Las Posas drains surface waters westward to the Pacific Ocean.

Alluvium is the primary water-bearing material in both basins. Additional water-bearing materials in the Las Posas Basin include the San Pedro Formation and the Santa Barbara Formation. Faults are not barriers to groundwater movement in the Action Basin. Movement of groundwater in the Las Posas Basin is restricted by various folds, synclines, and faults.

The total storage capacity is estimated at 40,000 acre-feet in the Acton Valley Basin and 345,000 acre-feet in the Las Posas Basin. The basins are primarily recharged from percolation of precipitation on the valley floors. The Acton Basin is also recharged by subsurface inflow.

Groundwater in the basins is primarily calcium bicarbonate in character. Impairments include high concentrations of TDS, sulfate, and chloride.

III.6.7.1.3 Central Valley

The transmission corridor outside the Plan Area in the Central Valley is primarily within the San Joaquin Valley Groundwater Basin, which includes numerous subbasins and is bordered on the west by the Coast Ranges, on the south by the San Emigdio and Tehachapi mountains, on the east by the Sierra Nevada Range and on the north by the Sacramento–San Joaquin Delta and Sacramento Valley. On the east side of the Tehachapi Mountains, the corridor is within the Antelope Valley Groundwater Basin, which extends into the Plan Area and is further described in Section III.6.4.10 West Mojave and Eastern Slopes ecoregion subarea.

The southern portion of the San Joaquin Valley is internally drained by the Kings, Kaweah, Tule, and Kern Rivers that flow into the Tulare drainage basin, including the beds of the former Tulare, Buena Vista, and Kern lakes. The northern portion of the valley drains

toward the Sacramento-San Joaquin Delta by the San Joaquin River and its tributaries: the Fresno, Merced, Tuolumne, and Stanislaus rivers.

Most basin aquifers in the Central Valley are composed of unconsolidated Quaternary alluvial deposits underlain by older unconsolidated to semi-consolidated Quaternary to Tertiary alluvial deposits.

Barriers to groundwater movement include various faults such as the Edison, Pond-Poso, and White Wolf faults, as well as folds such as the Elk Hills and Buena Vista Hills. Corcoran Clay restricts vertical movement of groundwater in some areas.

Storage capacity reported in the CDWR Bulletin 118 varies widely in the basin, up to more than 80,000,000 acre-feet in its northern parts. The majority of outflows are agricultural extraction. Other extraction sources include urban use, oil-industry-related use, and minimal subsurface outflow. Recharge is primarily from stream recharge and from deep percolation of applied irrigation water. Groundwater extraction and deep compaction of fine-grained units has resulted in subsidence within the basin.

Water types vary across the basin, from calcium bicarbonate in the shallow zones where sodium generally increases with depth. Bicarbonate is replaced by sulfate and reduced in chloride from east to west across the basin. Shallow groundwater presents problems for agriculture in the basin, including high TDS, sodium chloride, sulfate, arsenic in localized areas, nitrate, dibromochloropropane (DBCP), and ethylene dibromide (EDB). Groundwater at certain locations contains selenium and boron that may affect usability.

III.6.7.1.3.1 Alternatives

The affected environment for the alternatives in the Central Valley is the same as the Preferred Alternative.

III.6.7.1.4 Rialto/Moreno Valley/Devers Area

The transmission corridor in the Rialto/Moreno Valley/Devers Area would traverse seven groundwater basins: East Salton Sea, Chocolate Valley, Orocopia Valley, Coachella Valley, San Jacinto, Upper Santa Ana Valley, and Upper Mojave River Valley. Of these, East Salton Sea, Chocolate Valley, Orocopia Valley and Upper Mojave River Valley extend into the Plan Area and are described in Section III.6.4.1 Cadiz Valley and Chocolate Mountains ecoregion subarea, and Section III.6.4.2 Imperial Borrego Valley ecoregion subarea. The Upper Santa Ana Valley Groundwater Basin extends into the Los Angeles Area and is described in Section III.6.9.1.2 Los Angeles Area.

A portion of the transmission corridor is within the Desert Hot Springs Sub-basin of the Coachella Valley Groundwater Basin. This sub-basin underlies the northeastern portion of the Coachella Valley. The San Jacinto Groundwater Basin underlies the San Jacinto, Perris, Moreno, and Menifee valleys, which are drained by the San Jacinto River and its tributaries. The primary water-bearing materials in these basins are relatively undisturbed alluvial fan deposits of the late Pleistocene and Holocene eras. Several faults create barriers to groundwater movement including the mission Creek, Banning, Indio Hills, San Jacinto, Claremont, Hot Springs, Park Hill, and Casa Loma faults as well as smaller, related faults that parallel these larger faults.

The estimated groundwater storage capacity of the San Jacinto Basin and Desert Hot Springs is 3,070,000 and 4,100,000 acre-feet, respectively. Natural recharge to these basins is primarily from percolation of flow in the water courses and infiltration. In the San Jacinto Basin, natural recharge is augmented by spreading of State Water Project and reclaimed water through infiltration ponds throughout the valley. In years with low precipitation, artificial recharge can exceed natural recharge.

In the San Jacinto Groundwater Basin, typical groundwater character is sodium chloride, sodium-calcium chloride, calcium-sodium chloride, or calcium-sodium chloride-bicarbonate. The Desert Hot Springs Sub-basin is characterized by sodium sulfate type groundwater with high temperatures in some areas. In both basins, TDS is an impairment of concern.

III.6.7.1.4.1 Alternatives 1 and 3

The affected environment for alternatives 1 and 3 is the same as for the Preferred Alternative.

III.6.7.1.4.2 Alternatives 2 and 4

Alternatives 2 and 4 would include the same lines in the Rialto/Moreno Valley/Devers Area as the Preferred Alternative. Additionally, Alternatives 2 and 4 would require a new 500 kV line from the Lugo Substation to the Serrano Substation. The affected environment for these alternatives is the same as the Preferred Alternative, with the addition of the Coastal Plain of Orange County Groundwater Basin.

The Orange County Basin underlies the lower Santa Ana River watershed. An upper, middle, and lower aquifer system exists in this basin. The water-bearing formations within these aquifers include Holocene alluvium, older alluvium, stream terraces, and upper Pleistocene deposits (upper); lower Pleistocene Coyote Hills and San Pedro Formations (middle); and Upper Fernando Group of upper Pliocene Age (lower). There are three fault zones within this basin that restrict groundwater flow: Newport-Inglewood, Whittier, and Norwalk.

The total capacity of the Orange County Basin is 38,000,000 acre-feet. Recharge to the basin is primarily from percolation of Santa Ana River flow, infiltration of precipitation, and recharge injection wells.

Water within the basin is primarily sodium-calcium bicarbonate. Impairments of concern include increasing salinity, high nitrates and methyl tertiary butyl ether (MTBE).

III.6.7.2 BLM LUPA Outside of Plan Area

The BLM LUPA Affected Environment for groundwater resources includes almost 1.06 million acres of BLM-administered lands that are under the BLM CDCA Plan but outside the Plan Area. About 31% of these lands (348,700 acres) overlays 44 CDWR groundwater basins, and the remaining area is not associated with any groundwater basin identified by CDWR. Of the 44 affected groundwater basins, 25 are partially located in the Plan Area, while the remaining 19 basins are entirely outside the Plan Area. The 25 basins in the Plan Area with acreages under the BLM CDCA Plan but outside the Plan Area are summarized in Table III.6-15. Most of the outside acreages are small, and only 3 of the 25 basins have more than 5% of their total acreage under the BLM CDCA lands outside the Plan Area.

Table III.6-15
Department of Water Resources Basins in BLM LUPA Affected Environment but Outside the Plan Area

Basin Name	Total Basin Area (acres)	Basin Area within the CDCA Lands outside the Plan Area (acres)	Percent of Basin within the CDCA Lands outside the Plan Area
Antelope Valley	1,009,700	< 50	< 1%
Borrego Valley	152,500	3,300	2%
Butte Valley	8,800	< 50	< 1%
Chocolate Valley	129,100	27,900	22%
Coachella Valley–Mission Creek	48,500	11,300	23%
Coyote Wells Valley	145,600	7,500	5%
Death Valley	919,800	300	< 1%
East Salton Sea	194,800	1,500	< 1%
Imperial Valley	957,600	200	< 1%
Indian Wells Valley	381,500	500	< 1%
Johnson Valley–Soggy Lake	77,200	< 50	< 1%
Kern River Valley	79,400	100	< 1%
Lucerne Valley	147,300	< 50	< 1%
Middle Amargosa Valley	389,500	< 50	< 1%

Table III.6-15
Department of Water Resources Basins in BLM LUPA
Affected Environment but Outside the Plan Area

Basin Name	Total Basin Area (acres)	Basin Area within the CDCA Lands outside the Plan Area (acres)	Percent of Basin within the CDCA Lands outside the Plan Area
Needles Valley	87,900	< 50	< 1%
Orocopia Valley	96,200	37,100	39%
Owens Valley	660,700	13,800	2%
Pahrump Valley	92,800	< 50	< 1%
Panamint Valley	259,100	4,700	2%
Pipes Canyon Fault Valley	3,400	< 50	< 1%
Piute Valley	175,100	< 50	2%
Rose Valley	42,500	1,900	< 1%
Searles Valley	196,900	300	< 1%
Upper Mojave River Valley	412,500	< 50	4%
Vallecito-Carrizo Valley	121,700	2,200	< 1%

Note: The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.